

THE  
HIGHER  
SCHOOL CERTIFICATE  
EXAMINATION

BEING THE REPORT  
OF THE PANEL OF INVESTIGATORS APPOINTED BY  
THE SECONDARY SCHOOL EXAMINATIONS COUNCIL  
TO ENQUIRE INTO THE EIGHT APPROVED  
HIGHER SCHOOL CERTIFICATE EXAMINATIONS  
HELD IN THE SUMMER OF

1937

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# THE HIGHER SCHOOL CERTIFICATE EXAMINATION

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## INTRODUCTION

The last Investigation into the Higher School Certificate was held in 1926. In May, 1937, the Board of Education requested the Secondary School Examinations Council to conduct an Investigation into the Higher Certificate Examinations with special reference to the use of the Examinations for the purpose of awarding State and Local Education Authority Scholarships for the Universities. The Investigation was held in the winter of 1937-38 and the following Report was submitted by the Council to the Board of Education. The Board consider that the Report is of sufficient general interest to merit publication, but it should be understood that the opinions expressed therein are those of the Investigators and the Secondary School Examinations Council and are not necessarily those of the Board of Education. In addition to the main Report separate reports on the individual Examining Bodies were prepared and have been circulated to the Bodies concerned.

## PART I—GENERAL

## CHAPTER 1

## SCOPE AND FUNCTIONS OF THE EXAMINATION

1. The Second Approved Examination was originally designed as a test of two years' work beyond the stage of the First Examination. But in one respect among many these two Examinations differed from one another. The First was a test which all pupils remaining in a Secondary School for four or five years might be expected to face at about the age of sixteen. The Second was not thought of in the same way as a universal examination, so to speak. It might perhaps be described as a test of Sixth Form work set up at a time when Sixth Forms were yet more strongly influenced than at present by the traditions of the Public Schools and the ancient endowed Grammar Schools and of the older Universities. That conception found characteristic expression in certain Circulars published by the Board of Education and in the Board's system of Recognised Advanced Courses.

2. Two points are of special importance to anyone wishing to understand the stages of development through which the Second Examination has passed :—firstly, that those who established it did not foresee that the number of candidates would in process of years mount up to the very high figure of about 12,000 ; and secondly, that although it was originally designed as a test of school work, it was also from the first bound by strong links to the University. For the Examination was to be conducted by University Authorities ; also a candidate who satisfied the examiners might be exempted (upon conditions) from certain University Examinations—either Matriculation or Intermediate. This scheme of exemptions was deliberately devised in the interests of the schools with the object of reducing the multiplicity of examinations for which Sixth Form pupils had to be prepared.\*

Two further developments greatly strengthened the bond between the Second Examination and the Universities. When in 1920–21 the system of State Scholarships was established, the Board of Education decided that the awards should be made in accordance with the results of the Examinations and upon the recommendations of the Examining Bodies. At the same time the practice grew of Local Education Authorities making use of the Examinations for selecting their own scholars.

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\* Incidentally the pupils were also able by this means to avoid repeating, during their first year at the University, work which they had already done at school.



In the upshot it has been reckoned that at least one-half of the pupils who sit for this Examination have in view a career in a University or a Training College or desire exemption from the First M.B. Examination.

3. But while the ties which link this Examination with the University were thus being multiplied, inside the Secondary Schools the whole conception of Sixth Form work was undergoing an important change. With the increase in the number of pupils remaining at school beyond the stage of the First Examination the need arose for new kinds of courses (new subjects or new combinations of subjects). These new courses could not easily be fitted into the conception of Sixth Form work which the Second Examination was originally designed to test, or be brought within the four corners of the Board of Education's system of Recognised Advanced Courses. The new needs had to be met and two changes were made, the importance of which seems not to have been everywhere fully understood. In the first place the Examining Bodies modified, and indeed have now practically abolished, the Group system. Secondly, the Board of Education abandoned its system of Recognised Advanced Courses.

4. Clearly then, in recent years two tendencies have been modifying this Examination, the one working towards, and the other away from, the Universities. The Examining Bodies have found themselves, as it were, bestriding two steeds who have gone out on divergent paths. To abandon the simile, they have felt and in some cases obeyed the need for separating the two functions of this Examination—to act as a test for admission to Universities and to be a suitable school examination (i.e. a test of two useful years of post-School Certificate work).

The lead in this new policy was taken by the Northern Universities Joint Matriculation Board who, with the approval of the Secondary School Examinations Council decided that in 1938 candidates for State Scholarships and for Scholarships awarded by Local Education Authorities should be required to take special additional papers in two Principal Subjects. Further, the same Examining Body decided that the standard of difficulty of the other papers should be slightly lowered in favour of those candidates who were not competing for State Scholarships. Their lead in this matter has been followed by three other Examining Bodies and is likely to be followed by yet others, so far at least as the setting of special papers for scholarship candidates is concerned.

5. The work of the Investigators was to attempt to measure the extent to which this Examination, as conducted in 1937, had served its various purposes; at the same time, they took account of changes which had been decided upon by different Examining Bodies but had

not yet come into effect. It was also within their terms of reference to suggest modifications calculated to increase the efficiency of the Examination in view of its several functions.

Their conclusions may be summed up at the outset thus. They judged that the existing system, although complicated and exhibiting many defects, has discharged its various functions with a greater measure of success than might have been expected. They therefore recommend gradual improvement by successive modifications rather than the immediate application of drastic measures. At the same time, they had under consideration proposals made by some of their number for fundamental changes in the system. While they did not feel themselves to be in a position to make definite recommendations for the immediate adoption of any such schemes, they thought it well to present two of them for consideration, more especially if, as a result of this Report, the Secondary School Examinations Council should decide to recommend that a Committee be set up to initiate a long term policy involving fundamental changes.

## CHAPTER 2

CRITICISM OF THE EXAMINATIONS AS CONDUCTED  
IN 1937

This chapter opens with a summary statement in tabular form of the main criticisms made of the Examination. These criticisms are then expanded seriatim together with such suggestions for improvements as the Investigators have been able to offer.

A. (Paragraphs 6-11.) Failure to discharge with equal efficiency its two functions, on the one hand of selecting State and Local Education Authority Scholars and on the other of providing an adequate test of two years' work beyond the stage of the School Certificate.

B. (Paragraphs 12-31.) Lack of uniformity between one Examining Body and another in respect of :—

- (i) The load of the Examination.
- (ii) The standard of difficulty of the papers.
- (iii) The basis of recommendation of candidates for the award of Scholarships.
- (iv) Disparity in the sizes of the Examining Bodies as measured by the number of candidates.

C. (Paragraphs 32-38.) Anomalies in the method of allocating State Scholarships to Examining Bodies.

D. (Paragraphs 39-42.) Tendency of the present system to impoverish the Modern Universities.

E. (Paragraphs 43-69.) The Machinery of the Examinations.

F. (Paragraphs 70-72.) The strain imposed on the candidates.

A. *The Double Function of the Examination*

6. Of all the problems connected with the Second Examination by far the most important and most difficult is that of ensuring that the two functions of that Examination shall be efficiently discharged. Those two functions are—firstly to discover and place in a just order of merit candidates to be recommended for the award of State Scholarships and Local Education Authority Scholarships ; and secondly to provide a suitable test of two years' work in Secondary Schools beyond the stage of the First Examination.

7. The Investigators were agreed that the Examination as conducted in, and previous to, 1937 could not be expected to serve both purposes with complete efficiency. They recognised indeed that it

would be far from just to maintain that the failure had been disastrous. Careful study of the reports on the various subjects examined will suggest that in many instances the measure of success achieved was greater than might have been expected by anyone acquainted with the difficulties of the situation. Furthermore the subsequent careers at the University of those who have obtained Scholarships on the results of the Examination show that the selection on this side has not been injudicious.\* Apart from the testimony of results won in examinations for Degrees in Honours it appears from enquiries which have been made that the University authorities are by no means discontented with the material which reaches them in this way. How far, judged by the subsequent careers of candidates, the existing system has satisfactorily discharged its other function it is less easy to decide, but this much must be said, that the Secondary Schools are not agreed that drastic changes in the system are called for.

8. Nevertheless from different quarters a considerable volume of criticism has been directed against the Examination in respect of each of its main functions. Here it may suffice to refer only to the more important charges made, and that in general terms.

9. In so far as it is used to select State and Local Education Authority Scholars, the Examination is accused of being so framed as to encourage specialisation and reward mere memory work. Compared with examinations for Open Scholarships at Universities it is said to be less broad or liberal in conception and not to afford sufficient scope for originality and independence of judgment. Again it is said that in some subjects the examinations for Open Scholarships differ so widely from the Second Examination that in Sixth Forms which have to prepare pupils for both, it is difficult to organise the course of work so as to serve both purposes. It should be added that this difficulty more seriously affects the smaller schools.

A formal inquiry into examinations for Open Scholarships was no part of the work of the present Investigators. Nevertheless all of them had had experience either of preparing or examining candidates for such Scholarships.

This reservation being made, the following observations may be offered. To take the allegations that the Second Examination encourages specialisation and that it gives sheer memory for facts more than its due, it may be said that these criticisms do not apply to all the subjects examined. For example, it is often maintained that the tendency to encourage specialisation is strongest in Mathematics and Science or that sheer memory is more richly rewarded in History than in other subjects and this creates difficulties in selecting

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\* For the period 1929-33 the percentage of first classes among the ascertained results for boys is 51·6, of second classes 39·1 and of classes lower than second 9·3. For girls the percentages were respectively 23·4, 66·5, and 10·1.

the best candidates for Scholarships. (See Part II: Report of Investigators for History.) Questions implying a degree of maturity of experience and judgment not rightly to be looked for in boys and girls of this age are more likely to occur in the Humanities than in Mathematics or Science. On all these points further generalisations would be perilous and attention must be directed to the second part of this Report which contains reports on the several subjects of the Examination. The particular problem of giving due recognition to distinguished ability in a candidate is also examined in the section of this chapter which deals with marking (paragraphs 64-69).

Not a few of those who have suggested that the Second Examination is more limited in scope, or less broad in conception, than the examinations for Open Scholarships consider nevertheless that work for the Second Examination may be a good preparation for those who will subsequently present themselves as candidates for Open Scholarships. This suggestion comes from schools in which the pupils having presented themselves for the Second Examination at the end of their second year in the Sixth Form will compete for Open Scholarships in the following December—or later than this.

10. To pass now to the other main function of the Second Examination, that of providing a suitable test of two years' work beyond the stage of the School Certificate—the charges have been based partly on the same, partly on different grounds: on the same grounds in so far as it has been maintained that specialisation and memory work are encouraged: on different grounds when critics have urged that the system is made rigid by the existence of "Groups" of subjects and is narrow in the sense that only a limited range of subjects is required to be tested. There are those who hold that the non-scholarship candidate would stand to gain more by covering a wider field at less depth so to speak—for example, if instead of offering three Principal Subjects at the present standard of difficulty he were to take easier papers in four Principal Subjects. Some indeed would welcome the possibility of offering as many as six subjects all at Subsidiary level and no Principal Subject. In answer to these criticisms it *may be said first* that, as was previously noted, the Group system has for all practical purposes disappeared from the Examination so that there is far less restriction of choice than formerly. Secondly, the Northern Universities Joint Matriculation Board in their original proposals for fundamental changes in the Examination had proposed that four Principal Subjects should be offered by non-scholarship candidates. They were however unable to carry all their schools with them in the matter. For their part the Investigators do not regard it as a function of this Examination to test the *whole* range of studies undertaken by pupils in Secondary Schools during their career in the Sixth Form. Without desiring to propose a rigid formula they suggest that the range to be tested should represent not less than two-thirds and not more than three-quarters of the whole amount of work done as measured in time.

11. The problem of the double function of this Examination has for a long time past been carefully studied by the Examining Bodies, some of whom have now obtained the approval of the Secondary School Examinations Council for important changes in their system—mainly to introduce special or advanced papers to be taken by candidates for State Scholarships and to change the nature of the papers to be taken by the other candidates. All this, in the opinion of the Investigators, is a step in the right direction, but there are certain dangers against which precautions will have to be taken.

(a) *Scholarship Papers.*—(i) It is presumed that when for the purpose of awarding Local Education Authority Scholarships account is taken of performance in this Examination, candidates for those Scholarships as well as for State Scholarships will be required to take these special papers; otherwise most of the advantages aimed at will be lost.

(ii) There is a risk that the addition of special papers may unduly increase the burden of the Examination even though no candidate may attempt more than two of such papers and the standard of the other part of the Examination is to be reduced. On the other hand in attempting to avoid this danger the Examination may cease to be an adequate test of two years' work after the School Certificate stage for those candidates who do not aim at scholarships. Thus one Examining Body proposes that in Physics the work of these non-scholarship candidates shall be tested by six questions on theory and by a practical examination. It would not however seem impossible for the Examining Bodies to obviate these two dangers. Again it is probable that a large number of candidates lacking those abilities which could entitle them to be seriously considered for an award, will attempt the special scholarship papers either because their own ambition prompts them or because parents or teachers have overrated their powers. If the proportion of such pupils were to become so large that some two-thirds of the entrants for the Examination should be found taking the advanced—and therefore difficult—papers, the last state of the Examination would be worse than the first. There would seem to be two possible ways of meeting the difficulty. First, it could be arranged that the special papers should be taken not at the same time as the others but somewhat later; only those who had reached a certain standard in the other papers would be allowed to take the second part of the Examination. There is one serious practical objection to this proposal, namely that it would delay still further the publication of results, whereas even under the present scheme the interval between the taking of the Examination and the communication of results is inconveniently long both for schools and for Universities. On the other hand a proposal to overcome this difficulty by holding the Examination earlier would probably be strongly resisted by the schools. These objections might be overcome but there remains the point that the element of competition—which it would be desirable to reduce for non-scholarship candidates—would tend to increase.

(iii) The alternative is that the scholarship papers should be worked during the same period as the non-scholarship papers. A qualifying standard would be fixed on performance in the latter papers. The advantages of this method would be that failure to reach the qualifying standard need not be published ; secondly, the candidates who had qualified would not have to reassemble after an interval of time—an interval marked for many of them by acute anxiety ; thirdly the examiners for the scholarship papers would be working over scripts at the same time as the examiners for the non-scholarship papers and for that reason it might prove possible to make the qualifying bar less rigid.

(iv) In respect of the syllabuses in the different subjects the problem arises whether the questions in advanced or scholarship papers should be set on the same syllabus as those in the other papers. To this the Investigators would reply generally speaking in the affirmative, but would make exceptions in the case of Modern Languages and Mathematics. In Modern Languages the range of the advanced or scholarship papers should be wider than the syllabus for the other candidates. Mathematics is in a peculiar position. Papers are set which broadly speaking are suitable for candidates at the end of two years of post-School Certificate work. Other papers are set (generally known as Advanced Mathematics) more suitable for Sixth Form pupils of three years' standing. The papers in Advanced Mathematics will naturally be set on a wider syllabus. Candidates who offer Advanced Mathematics for scholarship purposes should be required—partly in order to facilitate comparison between the two types of candidates—to take also the scholarship papers which are set on the two-year syllabus.

(b) *Standard of Difficulty of Non-Scholarship Papers.*—(i) The decision to set special or advanced papers for scholarship candidates would seem to carry with it as a corollary a lower standard of difficulty for the other papers. The Investigators agree that for candidates not aiming at scholarships questions of a more straightforward character might be set but would deprecate any changes tending to result in a pass being allowed at a lower level of ability and attainment than was accepted in 1937.

(ii) The question of the award of Distinctions may conveniently be discussed in connection with the proposed changes. Some of the Examining Bodies concerned have decided that in future Distinctions shall be awarded only on the special or advanced papers. Perhaps by so doing they will to some extent avoid one criticism which has frequently been made of the selection of candidates for State Scholarships. It not infrequently occurs that a candidate who has not had a State Scholarship awarded to him has secured as many as three Distinction marks, whereas some of the successful candidates have had only two Distinctions or even one. This has caused considerable discontent among parents and has been the subject of

representations made to the Board of Education. It is difficult for those who have an imperfect acquaintance with examination problems to realise that if for example a Distinction represents 70 per cent. of the total marks, then a boy who in each of three subjects has scored 70 per cent. may well be less fitted for an award than one who has scored 40, 80 and 90 though the former will come off with three and the latter with only two Distinctions.

If then Distinctions are awarded only on the advanced papers which no boy may take in more than two subjects the occasions on which such complaints may be made will clearly be less numerous.

(iii) Nevertheless the Second Examination is not confined to testing powers of accumulating and reproducing facts but should also give opportunity to candidates for giving proof, though at different levels, of such qualities as independence of judgment and originality. And such qualities may be possessed by candidates who yet fall short of the level of ability and attainment looked for in the award of a University Scholarship. Clearly the questions in the ordinary (as well as in the advanced) papers should be framed accordingly and from this it would seem to follow that some distinguishing mark might well be attached to the work not only of candidates for Scholarships but of all those who take subjects at Principal level. Here however it should be noted that the problem of finding the right name by which to recognise this level of performance presents considerable difficulties. An employer receiving the credentials of an applicant must not be led to think that a "Good" obtained by him on a non-scholarship paper is equivalent to a "Distinction" obtained on a scholarship paper by a rival applicant.

(c) *New Scheme Introduced by the Cambridge Syndicate of Local Examinations.*—(i) Of all the proposed new schemes of examination the most interesting, elaborate and ingenious is that of the Cambridge Syndicate. The object of the changes is to allow the utmost elasticity of choice of subjects at different levels. This is effected by substituting for the Group system what is called "the unit system". Subjects may be examined at three levels—Advanced, Ordinary and Subsidiary. A subject taken at Advanced level is considered as representing three units, at Ordinary level two units and at Subsidiary level one. A candidate must offer not less than six and not more than nine units: he must offer at least one subject either at Ordinary or at Advanced standard, and if he is a candidate for a State Scholarship he must offer eight units. The remaining details of the scheme, interesting as they are, may here be omitted.

(ii) The Investigators did not fail to recognise the advantages which this scheme appears to offer. While so striking a departure from all previous practice can only be fairly judged when the results of several years are available, serious doubts were entertained on two points. Firstly it may be difficult to standardise results in the units

with their small numbers. Secondly the position assigned to Subsidiary Subjects is open to criticism. From what has been said above of the requirements of the new scheme it is clear that a candidate may choose to be examined in one subject at Ordinary standard and in as many as seven Subsidiary Subjects. This was done of set purpose and in answer to a certain demand, but it represents a change in the whole conception of Sixth Form work so revolutionary as to arouse the most serious apprehensions. The Investigators are aware that in certain quarters it has been said that the requirements of the Second Examination have unduly restricted the range of work in the schools. Indeed that criticism has already been referred to in a previous passage of this Report and it was pointed out that the abolition of the Group system had gone some way towards allowing freedom of choice. The question at issue then is not solely one of freedom of choice but rather of the range of work to be examined. In deciding this the first point to be settled is how much of the work done in school is to be examined, and to this the Investigators gave their reply when they laid it down that by no means all the school work of a candidate should be examined but—in general terms—so much of it as might have taken up from two-thirds to three-quarters of his school time. Within those limits how many separate subjects can he profitably attack with an examination in prospect? To find an answer is not easy but if the view be accepted—as the Investigators accept it—that what is to be looked for in Sixth Form work is a course having unity of aim and a certain solidity, whatever career the pupils may have in view, then it is extremely doubtful whether as many as five or six different subjects could be profitably attempted by the average Sixth Form boy or girl.

#### B. *Lack of Uniformity*

##### (i) *The Load of the Examination.*

12. The work of examining being shared by eight Examining Bodies, complete uniformity of method and results is not to be expected. On the other hand some limit must be set to diversity and it was one of the more important tasks of the Investigators to attempt an estimate of the degree of diversity exhibited in the Examinations conducted in 1937.

13. At first sight the most obvious point of difference between the Examinations is in respect of the load they impose on the candidate. In some Examinations he has the choice between offering three Principal Subjects, or two Principal and two Subsidiary. In others he is not required to offer more than two Principal Subjects and one Subsidiary. It is indeed not impossible that these various loads can be made equal: all depends upon the weights of the several component parts. To measure these weights is a matter of extreme difficulty but the Investigators at least could find no reason to think that equality had been established—that the weights of either the Principal or the Subsidiary Subjects or of both—had been carefully

adjusted so that the balance could stand even.\* In particular they were struck by the differences of view entertained by the Examining Bodies with regard to the function of Subsidiary Subjects. This is a matter of such importance that it will be necessary to consider it in some detail here.

14. It will be advisable to begin by considering possible differences in the aim of subsidiary studies :—

(a) The study of one subject at subsidiary level may be ancillary to the fuller or more intensive study of another subject. Thus Mathematics may be ancillary to Physics, or Latin to Modern Studies.

Where this view of the scope of a subsidiary study is adopted it is clear that in most subjects it will not be adequately tested by requiring that the candidate should take one or more of the papers set for those who offer those subjects at Principal level.

(b) As contrasted with the ancillary function, a subject may be valued, so to speak, for itself rather than for the help it affords to the study of some cognate subject. In this case the aim may be either to cover the *whole* field covered by those who offer the same subject as a Principal, but not to dig so deep : or it may be to work over *part* of the same field at the same depth as a Principal Subject. The first aim seems possible in the Sciences for example : the second in History. In the Sciences, then, special subsidiary papers would be necessary, but historians might take for subsidiary purposes some of the Principal papers.

(c) In many schools it is the practice to introduce into the time-tables of Sixth Forms what are sometimes known as "relief subjects". For example a Classical Sixth in a boys' school will devote two periods a week to Science or to Mathematics or in a girls' school to Art or Music or Domestic Science. From one point of view these relief studies could be called subsidiary, but the Investigators are of opinion that they should not be examined. So much indeed is suggested by the very name of "relief" subjects.

15. The standard of difficulty of the examinations in Subsidiary Subjects should be lower than in Principal Subjects and the load of study should be lighter (or, differently put, the scope should be more restricted). On this point there is universal agreement. Whereas, however, some Examining Bodies would fix a point of difficulty and a load of studies intermediate between those appropriate to a Principal Subject and those appropriate to the same subject in the School Certificate Examination, others think that Subsidiary Subjects should be examined at the same level as School Certificate subjects. The Investigators are strongly opposed to the latter view.

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\* Perhaps a special mention might be made here of the difference in weight attached to practical examinations in Science by the various Examining Bodies.

They can see no valid reason for making these two Examinations (the School Certificate and the Higher School Certificate) overlap. If a pupil who has already obtained a School Certificate wishes thereafter to be examined in any subject or subjects at the standard of the First Examination, it is always open to him to take the papers set in that subject in the First Examination without having to take it as a whole.

16. Another attempt to measure the standard and scope appropriate to Subsidiary Subjects is represented by the frequently expressed view that a Subsidiary Subject is equivalent to half a Principal Subject or that it tests one year's work (instead of two) beyond the stage of the First Examination. The Investigators suggest that this conception, so phrased, may form an unsound premise from which to draw conclusions for practice. One such conclusion might be that a candidate who intends to take Physics or Greek as a Principal Subject after two years of study may well—for the sake of practice—take the Subsidiary Examination in either subject at the end of his first year and that he will then be halfway through his course. And indeed this is what is actually being done in some schools. But a course of two years' work in a subject cannot be neatly divided up in this manner. It is not likely that the pupil concerned will have reached the halfway point of his journey at the end of one year; he may have travelled little more than a third of the journey. And the difference between the first year's work and the second year's work is not one of quantity only, but also of quality. Many teachers of experience will testify to this.

17. It is not here being maintained either that Subsidiary Subjects should no longer form part of the Second Examination or, on the other hand, that a one-year course beyond the stage of the First Examination is necessarily unprofitable. Such a course indeed may be advisable and necessary for certain pupils but the results will be unsatisfactory if those following it study, let us say, Physics or Greek along with the pupils who are following a two-year course. For as has already been said, the first year of a two-year course is not, in most subjects, a self-complete or easily separable entity. The boy who can only devote one year to Physics in the Sixth Form will not be set to learn one half of the things he would have learnt if he had completed two years of study. The boy who follows a one-year course in European History will not stop short at 1789 because that is the point reached at the end of a year by his classmates who in their second year will go forward to 1914.

18. It would seem to follow that the term "Subsidiary Subject" should be used only in connection with the full Second Examination and that a new terminology and content should be found for any examination which might be designed to test one year's work in the Sixth Form.

19. To sum up, the Investigators submit that since the Second Examination was intended to be a test of a two-year course beyond the First Examination, the Subsidiary papers, as part of that Examination, should be taken only at the same time as the papers in the Principal Subjects. Further, keeping it in mind that this Examination should not attempt to test the *whole* of the work done in the schools during the two-year course they suggest that as regards the load of the Examination the scale adopted by the majority of the Examining Bodies in 1937 is likely to yield the most satisfactory results and to meet all reasonable demands from the schools—namely, a choice between three Principal Subjects or two Principal together with two Subsidiary Subjects.

20. There is yet another problem connected with Subsidiary Subjects. Should performance in these subjects be taken into account in selecting candidates for the award of State Scholarships? The Investigators were of opinion that, with an exception presently to be mentioned, they should not be taken into account. Scholarships should be awarded upon a candidate's performance in those subjects which will be the main material of his studies during his University career. These will naturally be subjects which he will offer at Principal level. When, however, two candidates who are in the running for an award appear to be on a level with each other in respect of their performance in the Principal Subjects, consideration may be given to their work in a Subsidiary Subject if that can reasonably be regarded as a subject ancillary to one of the Principal Subjects offered by them.\*

(ii) *Standard of Difficulty of the Papers*

21. The nature of the obstacles which confront anyone who attempts to compare several examinations in point of difficulty is most clearly exhibited in connection with the award of State Scholarships. It is not unusual to hear the opinion expressed in the schools that it is easier for a candidate to obtain a State Scholarship on the Examination set by one Body than on that set by another. Here it may be said that from the nature of the case it would not be surprising if the statement were true, but that conclusive evidence is difficult if not impossible to obtain.

22. The two main lines of enquiry actually followed during the Investigation in an attempt to elucidate this problem were:—(a) a detailed examination and comparison of border-line scripts chosen for this purpose from those worked in the various Examinations, and (b) a comparison of the subsequent performances of the successful State Scholarship candidates from the different Examining Bodies.

\* Here it may be added that when an Examining Body decides that a Subsidiary Subject shall be taken into account for the award of scholarships, this decision should be made known to the schools.



A brief outline of the main reasons why these attempts failed to produce conclusive evidence will bring out the inherent difficulty of the problem.

(a) Let us consider first of all the problem of comparing two scripts from different Examinations in the same subject, both worked by candidates who just failed to secure a State Scholarship. The scripts under examination are in answer to question papers which differ in many important respects. The syllabuses are different, types of question and standard of difficulty vary, the number of questions to be answered in a given time and the extent to which a choice of question is offered and in Science Subjects, the type of practical examination set and the weight carried, are by no means the same. Which is the better candidate, one who scores nearly the maximum mark on a paper of somewhat limited scope, or one who obtains a much lower absolute mark (though still high in order of merit) in a much more searching and comprehensive test? Even if the same question occurs in the two papers it does not necessarily facilitate comparison. It may be one candidate's best answer and the other candidate's worst. The question may be an alternative in one paper and compulsory in the other: twenty minutes may be available for it, on the average, in the one case and half an hour in the other: the kind of topic concerned may be given prominence in one syllabus but relegated to the background in the other. These are but a few of the factors which lead to wide variations in the degree of merit of the answers that may easily be without significance or even misleading. Moreover, in the comparison, is it promise or performance that is to decide the issue? Is it a high level of technical skill combined with factual knowledge that should earn a State Scholarship, or are blemishes in these respects to be overlooked in the face of suggestions in the script of an original outlook and intellectual power—and to what extent? Such questions cropped up at every turn and completely stultified the attempt to obtain anything approaching an objective comparison of standards in any one subject. This is not to imply that the Investigators were not convinced that there was a definite difference in standard. Indeed in some subjects in some of the smaller Examining Bodies they were of the clear opinion that candidates of undoubtedly Open Scholarship calibre had failed to obtain State Scholarships for reasons dealt with later (paragraph 34).

The matter does not rest there. State Scholarships were not as a rule awarded on excellence in one subject alone.\* It was in these circumstances not easy to decide, for the purpose of comparison, who was a border-line State Scholarship candidate. Everything depends on the principles adopted for weighing one

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\* Advanced Mathematics is an exception: also Classics, if this may legitimately be accounted one subject. (See paragraph 26.)

subject against another. This difficulty is not really overcome by arranging candidates in order of aggregate or standardised marks. Any given system of standardisation gives a definite answer to the problem, but by no means the only answer. Most Examining Bodies, when asked who were their next candidates for State Scholarships, below their few reserves, replied, with much reason on their side, that, without another meeting of their awarding committee, it would be almost impossible to say.

(b) In order to obtain comprehensive data as to the subsequent performance of State Scholars from the several Examining Bodies, all the successful candidates in the years 1929-1933 inclusive were classified according to the class obtained in their first examination qualifying for a degree. This five-year period was chosen as the latest possible if the degree results were to be known for the majority, and as large enough to yield a considerable number of cases without going too far back into a period when conditions differed appreciably from those obtaining now (e.g. as regards the number of State Scholarships awarded every year). The total number of State Scholars involved was about 1,400, and in all but about 5 per cent. of the cases the degree result was available. The percentage of boys\* from all Examining Bodies who obtained a first class was 51.6. The percentage for individual Bodies varied from 41.2 to 60.3. But it must be said that extremes at each end of the range refer to smaller Bodies for whom, even over this five-year period, comparatively few results were available. In such cases the occurrence of a few more or a few less first class degrees would have brought the figures much nearer the average. Supposing then that a first class degree means the same in all subjects and at all Universities (an assumption which in view of the large number of State Scholars who proceed to the same University, is not quite so perilous as it might otherwise be), the differences revealed by this analysis can scarcely be described as statistically significant. On the other hand it may well be significant and bears out the general impression formed by Investigators after examination of the scripts, that in only one of the smaller Examining Bodies is the percentage of first class degrees below the average for all Bodies; and if the four smaller Bodies are put together to form one larger group, the percentage of first class degrees for this group is 55.5, i.e. higher than that for any of the larger Examining Bodies.

(c) The Investigators if challenged to suggest what steps could be taken to secure greater uniformity of standard as regards the difficulty of the papers set in several examinations,

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\* For reasons connected with the disparity in standard for State Scholarships between boys and girls, the degree figures for girls do not present a sound basis of comparison.

could only reply that complete success in this respect is well nigh unattainable. The only observations they are in a position to offer are these. First, the practice of appointing good and experienced examiners who have worked for more than one Examining Body provides a certain safeguard. Secondly, uniformity is more likely to exist between examinations when the numbers of candidates are large enough to admit of statistical control but not so large as to occasion a risk that the statistical machinery may take charge. In the present circumstances, with some Examinations attracting only a few hundred candidates and others several thousands, the prospects of uniformity cannot be described as hopeful.

(iii) *Basis of Recommendation of Candidates for the Award of Scholarships*

23. In the general principles upon which Examining Bodies select candidates to be recommended for the award of Scholarships there is an important difference to be observed. Most of the Examining Bodies attach special importance to signs of distinction in one subject (at the same time taking into account performance in other subjects). One large Examining Body on the other hand expresses a preference for the all-round candidate. Detailed examination of this point is clearly bound up very closely with problems of marking, and attention is here drawn to Paragraphs 64-66 of this chapter where that aspect of the problem is studied in detail.

24. This may however be a suitable point at which to refer to suggestions made in the General Reports on English and History (Part II) that candidates who disclose abilities of scholarship standard in *either* of these subjects, should on that ground alone be taken into consideration for the award of Scholarships rather than on the ground that they achieved a certain aggregate of marks in either of these subjects, together with one or with two other subjects. In other words the plea is that the State Scholarships in English and in History should be single-subject Scholarships.\* It may be argued firstly that by so acting the Examining Bodies would come into line with the examiners for Open Scholarships at Oxford and Cambridge. These latter examiners have regard almost entirely to the fact that the candidate, if successful, will during his University career read for Final Honours in one subject only. It is further argued that to use an aggregate of marks in several subjects is to apply a quantitative measure, where what is desired is a measure of quality. The argument is that under present arrangements it is too often the power to memorise and reproduce facts drawn from text-books which is being rewarded and not liveliness of mind, originality and independent judgment. Finally, it is claimed, there are precedents for the proposal. Scholarships in Classics and Mathematics are already single-subject Scholarships.

\* It has been suggested that in Wales, Welsh has a strong claim to be put in the same position as is here advocated for English and History.

25. The Panel of Investigators as a whole are unable to support these suggestions. They maintain that the boy or girl who might be described as "good all round" deserves consideration as well as the candidate of conspicuous ability in a narrower field. At the same time they agree that something more than the mere ability to memorise and reproduce facts is to be looked for in a State Scholar, and they fully accept the statement that in some of the Examinations investigated there were instances in which real brilliance in one field did not receive the recognition due to it, whereas the "stodgy" candidate was overrated. Such mistakes as these however do not appear to be inevitable under the present conditions of examination, and should be less likely in the future in those Examinations which include special or advanced papers for Scholarship candidates. The Investigators recommend in particular the practice followed by the London examiners of attaching a "double star" to work of special distinction such as might seem to mark out a candidate for immediate consideration.\*

26. Whether the practice of awarding single-subject Scholarships in Classics or Advanced Mathematics constitutes a true precedent is open to question. Leaving on one side the extremely difficult problem of assigning a quite definite connotation to the word "subject" the Investigators point out that under the term "Classics" are included two languages and literatures as well as certain periods of Ancient History. Advanced Mathematics is a study with a higher degree of unity, but the examination in it cannot profitably be attempted after a course of study of less than three years in duration. During the whole period then of three years a fair proportion of time will have been given to Physics, and indeed it is probable that many candidates who present themselves for examination in Advanced Mathematics will in the preceding year have taken the Second Examination in a combination of these two subjects.

27. The Panel of Investigators in forming an opinion on this problem were in part influenced by a fear lest the award of Scholarships on a single-subject basis might encourage undue specialisation in the Sixth Forms of Secondary Schools. They note that in the General Reports on the examinations in English and History safeguards are proposed. The Investigators for both subjects suggest that the candidate for a State Scholarship should offer himself for examination in two other subjects (in addition to English or History), one at least of which should be a foreign language, ancient or modern. In all three subjects the candidate should be required to reach an agreed level higher than the pass level. It is clear that in this way the temptation to indulge in excessive specialisation would be reduced, but it would not disappear, especially if as is proposed by some Examining Bodies, the standard of difficulty of the ordinary (as opposed to the special or advanced) papers were to be lowered.

\* It is not superfluous to point out that very great discretion should be exercised in the award of "double stars". Attention is invited to the section of this chapter which deals with marking (paragraphs 54-69).

(iv) *Disparity in the Sizes of Examining Bodies as Measured by the Number of Candidates*

28. Diversity of practice, inevitable when eight Examining Bodies are in the field, is accentuated when the numbers examined by the different Bodies vary widely. In 1937 these numbers were as follows\* :—

	Boys.	Girls.	Total.
Northern Universities Joint Matriculation Board	2,690	1,660	4,350
Oxford and Cambridge Schools Examination Board.	2,482	145	2,627
London University .. .. .	1,598	877	2,475
Central Welsh Board .. .. .	670	353	1,023
Cambridge Syndicate of Local Examinations..	448	250	698
Oxford Delegacy of Local Examinations ..	345	236	581
Durham University .. .. .	125	109	234
Bristol University .. .. .	137	72	209

The Investigators are aware of certain advantages and disadvantages incident both to large and to small numbers which it will be in place to mention here.

29. In a large examination there should be in the first place a gain in economy, if only because the overhead expenses are divided among a greater number of candidates. What may be the optimum number from this point of view the Investigators are not in a position to suggest. Secondly, when the numbers of candidates are large and form what may be called a representative sample, there is considerable justification for assuming that the standard of ability from year to year will vary much less widely than with small numbers. But there are also serious disadvantages. Thus in such examinations the somewhat elaborate machinery including the use of statistical methods necessary to ensure uniformity and consistency in the marking may not be understood by all the examiners employed as fully as it should be if their marking and awarding is not to become somewhat mechanical. Yet again in a large examination the conduct of oral examinations in languages and of practical examinations in Science is attended with very great difficulties. Lastly, close contact with the numerous contributing schools, though not impossible, is obviously not easy.

30. With small Examining Bodies such contacts are easy and have been fruitful. Such Bodies also enjoy other advantages. Thus although some measure of statistical control is often found helpful, it need not be elaborate. Since the examiners are few in any subject, collaboration is easy and effective and the Secretary is

\* These are the numbers of pupils taking the *full* examination for the Higher School Certificate.

better able to make himself acquainted in some detail with their methods and their results. On the other hand, since, as has already been pointed out, the level of ability of pupils will tend to vary within wide limits over a series of years, the reliability of examination results is likely to be less than in large examinations. Another point to which reference is made elsewhere is the difficulty which is encountered under the present system of allocation, in apportioning recommendations for the award of Scholarships among the different subjects.

31. This disparity in the size of the eight Examinations as measured by the number of candidates taking each was the subject of criticism in the Investigators' Report on the First Examination of 1931. It is difficult to see how except by drastic means the present situation can be changed and on this subject the Investigators did not arrive at any general conclusions.

*C. Anomalies in the Method of Allocating State Scholarships to Examining Bodies*

32. State Scholarships are awarded by the Board of Education in conformity with recommendations made by each Examining Body. Each of these Bodies is empowered to recommend in any given year a number of candidates which is calculated, with one exception, in proportion to the total number of candidates who had presented themselves for its Examination in one or more previous years. Such a basis of allotment would be a sound one if it could be assumed that the proportion of Higher School Certificate candidates who were of real scholarship calibre and had entered for a State Scholarship was approximately the same for each Examining Body. In the case of the Oxford and Cambridge Schools Examination Board there will inevitably be a much larger proportion of well qualified candidates who do not need a State Scholarship in order to enable them to proceed to a University than is the case in the other Examining Bodies. A lower allowance is therefore made to this Examining Body and this is the exception referred to above. In any case the allotment to them is bound, for this reason, to be a matter of special consideration, whatever the scheme adopted with regard to the others and it is left out of account in the remainder of this discussion.

33. It remains now to consider whether the allotment to the remaining seven Examining Bodies can fairly be made on the hypothesis that each has the same proportion of candidates of real scholarship calibre. If the groups examined by these Bodies differ much as regards age distribution, then they are not in this respect equivalent samples and doubts may be felt as to the truth of the fundamental hypothesis (see third sentence of preceding paragraph). This may, for instance, be vitiated if the proportions of candidates entering one year after School Certificate for a trial run or the proportions who stay on for a third year in the Sixth Form having failed to obtain a State Scholarship in their second year are much larger

in one Examining Body than in another, so that the number of candidates in that Examining Body is swollen without a corresponding increase in the number of candidates of real scholarship calibre. Given reasonable stability in the position from year to year such difficulties would be overcome by making the allotment on the basis of the number of candidates taking the Examination for the first time or, what would amount to the same thing, if the recommendation made elsewhere were adopted, on the basis of those taking the Examination in their second year after School Certificate (paragraphs 71 and 72). The changes in allotment produced by such a modification are shown approximately in the table below, and reflect the extent to which Examining Bodies do in fact differ in those particulars which are under consideration here.

34. As a matter of fact conditions do not remain quite stable from year to year and it would probably be as well, there being no administrative reasons to the contrary, to utilise the data for the actual year of the Examination rather than to base the allotment on the conditions of previous years.

Any such basis of allotment must of course depend on the number of candidates in each Examining Body being sufficiently large. In the smaller Examining Bodies the actual number of brilliant candidates must inevitably vary considerably from year to year. In one year they may well outnumber the few Scholarships available for that body, and in another year there may be a comparative dearth of such candidates. The problem of apportioning a small number of Scholarships among the subjects aggravates the difficulty. Among the schools taking the Examination in question there may, for example, be one with a large Classical Sixth well known for its good work. It may then well prove impossible to give Scholarships to all outstanding candidates in Classics without denuding other subjects beyond what might be thought generally reasonable. Examination of scripts and a comparative study of the subsequent performance of candidates in past years convinced the Investigators that such factors were causing unfairness. While it is not possible entirely to prevent such consequences, a small modification of the basis of strict proportionality would mitigate it to some extent without introducing any real hardship elsewhere. The suggestion is that five Scholarships (three for boys and two for girls) should be allotted in the first instance to every Examining Body, and that the remaining Scholarships, excluding those already allotted to the Oxford and Cambridge Schools Examination Board, should be divided among the Examining Bodies in the proportion recommended above (paragraph 33, last two sentences).

35. The effect of such a proposal would be to reduce slightly the allowance of Scholarships to the larger Bodies. In these Examinations, when cases which lie on the borderline come under consideration, the gaining of an award is bound to be to some extent a matter

of chance—a considerable number of candidates being contained within a small mark range. A slight raising of this border-line would hardly produce serious hardship or exclude outstanding candidates. The allotment of the few additional Scholarships to the smaller Examining Bodies would make it less likely that outstanding candidates there would have to be passed over for the reasons explained. In some years the borderline candidates in these Bodies would not be so strong as in others, but it is doubtful whether candidates appreciably weaker than borderline candidates in the larger Examining Bodies would be introduced: and after all Examining Bodies always have the option of refusing to make their full number of recommendations.

36. Assuming that the allotment to the Oxford and Cambridge Schools Examination Board remains as at present (Boys, 48; Girls, 5) the approximate result of using the various bases discussed above for distributing the remaining 187 Scholarships for boys and 120 Scholarships for girls to the other seven Bodies is shown in the following Table.

*Boys.*

	(a)	(b)	(c)	(d)	(e)	(f)
Oxford Delegacy of Local Examinations ..	10	11	12	12	13	14
Cambridge Syndicate of Local Examinations	13	14	15	15	15	16
Bristol University .. .. .	4	4	4	7	7	7
Durham University .. .. .	5	4	4	7	7	7
London University .. .. .	46	50	53	44	47	50
Northern Universities Joint Matriculation Board.	86	83	77	79	76	71
Central Welsh Board .. .. .	23	21	22	23	22	22

*Girls.*

	(a)	(b)	(c)	(d)	(e)	(f)
Oxford Delegacy of Local Examinations ..	7	8	9	8	9	10
Cambridge Syndicate of Local Examinations..	9	8	9	10	9	10
Bristol University .. .. .	3	3	3	5	4	5
Durham University .. .. .	3	4	4	5	6	6
London University .. .. .	32	29	30	30	28	28
Northern Universities Joint Matriculation Board.	53	56	54	49	51	49
Central Welsh Board .. .. .	13	12	11	13	13	12

Column (a) shows the actual allotment in 1937.

„ (b) shows the allotment proportional to the actual numbers of candidates for a full Certificate in 1937.

„ (c) shows the allotment proportional to the number of candidates for a full Certificate taking the Examination in 1937 two years after School Certificate.

Columns (d), (e), (f) show the results of allotting 3 boys' Scholarships and 2 girls' Scholarships to each Examining Body and allotting the remainder in the proportion shown in columns (a), (b), (c) respectively.

37. The method of apportionment recommended by the Investigators is that whose result is illustrated in column (f). It is not claimed that this, or indeed any basis, can be absolutely just at the borderline. It is however suggested that, year in and year out, this method will be reasonably fair and avoid any serious injustices.

38. One consequence of such a change might well be that the smaller Examining Bodies might in future attract a larger number of candidates. For it is known that the impression exists among the schools (though exactly how widespread it may be there is no means of discovering) that it is easier for a candidate to obtain a State Scholarship if he is examined by one of the larger Examining Bodies.\* A flow of candidates from the larger to the smaller Examining Bodies is much to be desired since it would reduce the disparity and diversity between them which has already been the subject of discussion in a previous section. The Investigators however wish to make it clear that the hope of reducing disparity between Examining Bodies is not in their view a prime reason for advocating the change proposed above but a desirable result which that change might produce.

#### *D. Tendency of the Present System to Impoverish the Modern Universities*

39. A problem of some gravity connected with the tenure of State Scholarships revealed itself in the course of the Investigation. It appears that the number of State Scholarships taken up at all but one of the Modern Universities is decreasing and the number taken up at Oxford, Cambridge and London is correspondingly on the increase. This can best be shown in tabular form. The figures given are percentages of the total number of State Scholarships awarded.

Scholarships taken up at									
	Oxford and Cambridge.			London.			Other Universities.		
	Men.	Women.	Total.	Men.	Women.	Total.	Men.	Women.	Total.
1930 ..	70.6	37.5	57.6	11.3	26.9	17.4	18.1	35.6	25.0
1936 ..	82.3	46.6	69.5	10.5	36.2	19.7	7.2	17.2	10.8
Increase or Decrease	+11.7	+ 9.1	+11.9	—	+ 9.3	+ 2.3	—	—	—
	—	—	—	- 0.8	—	—	-10.9	-18.4	-14.2

The position may be generally summarised by saying that whereas in 1930 about one-quarter of the State Scholars went to Modern Universities, that proportion has now shrunk to a little more than

\* The Investigators were unable to find any concrete evidence in support of this impression. That the impression exists is certain, but again, there was no means of discovering how widespread it may be.

one-tenth : and again that in 1936 four out of every five men State Scholars went to Oxford or Cambridge. Of the women the proportion going to Modern Universities other than London has diminished from over a third to a little over one-sixth.

40. It has been a cardinal principle of the State Scholarship system that no compulsion shall be put on the scholar's choice of a University. Whilst cordially agreeing with the general soundness of this principle the Investigators think that the scholars' selection is not always in their own best interest and is too much affected by the immense prestige of the two older Universities and of London. And whilst they would deprecate any compulsion, they suggest that there may be a number of scholars now entering Oxford and Cambridge who, not at all on account of their financial or social position, would be better suited by the opportunities provided at one of the Modern Universities.

41. So much from the point of view of the pupils. From the point of view of the Modern Universities themselves there must be loss. For when talent is diverted elsewhere, it becomes increasingly difficult for these Universities to maintain the standard of performance in the different faculties at a satisfactory level.

42. The Investigators recognise that it is not within their terms of reference to discuss this problem except in connection with the conduct of the Second Examination. From that point of view they can only invite attention to what is said in Chapter 4 of this part of the Report.

#### *E. The Machinery of the Examinations*

43. Under this heading will be considered the constitution of Examining Bodies, the special arrangements for framing and revising regulations and syllabuses, for maintaining contact with the schools and for the appointment of examiners.

44. The constitution of an Examining Body is determined partly by its relation to the University Body. The Oxford and Cambridge Schools Examination Board enjoys the greatest measure of independence so that its constitution is relatively simple. Other Examining Bodies—for instance the Oxford Delegacy of Local Examinations and the Cambridge Syndicate of Local Examinations—whilst under University control have very wide discretionary powers. In contrast to this, the London Examination is conducted by a Council which is one of the five Statutory Committees of the Senate: the Senate's approval must be obtained before any major changes in the scope of the Examination can be carried out.

45. The Investigators see no reason for dissenting from the view taken from the first by the Board of Education that the task of conducting both the First and Second Examinations should be entrusted to the Universities. At the same time it is most important that

University control should not operate in such a way as to interfere with flexibility or prevent rapid decisions. Further it should provide for close contact with the schools examined and for full opportunities for the expression of views by secondary teachers and by Local Education Authorities.

Flexibility and rapidity in action are difficult unless considerable powers are delegated to the Body (Council, Committee or Board) which administers the Examination and the Investigators consider that for these reasons the constitution of such Bodies as the Oxford Delegacy of Local Examinations and the Cambridge Syndicate of Local Examinations and the Joint Matriculation Board of the Northern Universities is the most suitable.

46. Since for such purposes as the framing of, or revising of regulations and syllabuses, most Examining Bodies are too large, the work is in the first instance entrusted to sub-committees. The machinery in use by different Bodies exhibits such wide varieties that no account in general terms is possible. Perhaps the most frequent arrangement is one major sub-committee which considers proposals brought forward by "Subject-panels" or "Group Sub-Committees". One example of this may be quoted:—"Regulations and syllabuses are submitted annually to the Advisory Committee (consisting of seven members of the Examining Body and twelve representatives of the four Secondary Teachers' Associations). Suggestions for changes are discussed. If a new syllabus is required in Science, for example, the drafting is entrusted to the sub-committee for Natural Science to which school teachers of the subject are co-opted. When the syllabus is drafted it is circulated to members of the Advisory Committee and the opinion of many other teachers is obtained before the syllabus is finally adopted by the Committee and recommended to the Examining Body". Other Examining Bodies have somewhat similar arrangements which recommend themselves by their simplicity and by the manner in which the teachers' interests are consulted. And here it may be noted that in one case there was reason to think that machinery for keeping in touch with schools and teachers appeared to be admirably designed for its purpose but broke down because—largely on account of its elaborate nature—it did not regularly function.

47. The success of any particular Higher Certificate Examination depends very largely upon the extent to which it commands the confidence of the Secondary Schools. It is therefore gratifying to find that in at least six of the eight Examinations specially careful arrangements have been made to this end. The means for maintaining contact are these:—

(a) The Examining Body holds an annual conference to which the teachers are invited and many problems arise for discussion. These conferences serve at least one useful purpose in that they enable the Examining Body to gauge the temper, as it were, of

the schools and to ascertain which are the problems which in any given year are chiefly engaging the attention of the teachers. On the other hand a large gathering cannot effectively discuss detailed arrangements—for example the drafting of syllabuses. Indeed without the most careful and laborious preparations useful discussion even on general problems is not to be expected.

(b) Each of the eight Examining Bodies includes Secondary School teachers among its members and teachers also sit on the sub-committees. But besides this many of the Examining Bodies are in the habit of consulting the four Associations of Secondary Teachers: for example the Northern Universities Joint Matriculation Board refers to these Associations for comments upon any proposals involving important changes in regulations or syllabuses.

(c) Schools sending forward candidates to the Examination are invited by the Bodies to submit the school records of those candidates—i.e. estimates of the relative merits of each boy or girl in each subject offered for examination. Such records are taken into account in doubtful or “borderline” cases. Generally speaking it is not clear that such records are as useful as might be hoped. Apart from the fact that a school may present only one or perhaps two candidates in some particular subject, it is not likely that valuable guidance can be given to the examiners except by schools which have been in the habit for many years of sending in candidates for the Examination with consistent results.

(d) Finally there are what might be called occasional or informal contacts by interview or correspondence between the Examining Body and the schools. It might be held that of all ways of establishing contact this is the most fruitful.

48. Generally speaking, appointments of Examiners are annual and subject to renewal up to a term of years—usually four or five. The majority are usually University teachers, though the proportions of these to school teachers vary widely from one Body to another. Special mention may here be made of the Northern Universities Joint Matriculation Board, of whose examiners in 1937 nearly one-half were school teachers. Bodies differ in the precautions taken to ensure that suitable training and experience are afforded to those Assistant Examiners who are likely to be called upon in subsequent years to act as Chief Examiners. Again, instances occurred in which insufficient care was taken to secure that two or more Examiners examining the same paper applied the same standard or that any one Examiner maintained a consistent standard throughout his whole marking.

49. On the length of tenure of office by Examiners the Investigators wish to make three observations only. Firstly, the minimum tenure of office for a Chief Examiner should be more than two years.

There is not, in two years, time in which to prove him or to make sure that changes which he may introduce, although unpopular at first, may not really be sound. Secondly, when two Chief Examiners are to be employed for any one subject, it is important that both should not retire from office simultaneously.

Lastly, as to the field of recruitment for Examiners it would appear that in proportion as the Second Examination may be becoming more and more a test of two years of post-School Certificate work and in proportion less and less a test of fitness for a University career, the proportion of school-teacher examiners should increase and that of University teachers diminish.\* And such an increase may be welcomed: at the same time the first and most important requisite in an examiner is that he should be skilful in examining—which is an entirely different art from the art of teaching. The motto of Examining Bodies might well be in this business “*Je prends mon bien où je le trouve*”. On the other hand the school teachers have a very strong claim to be allowed to act as *moderators*; and this claim is very freely recognised by the great majority of the Examining Bodies.

It is considered inadvisable that executive officers of Examining Bodies should act as Examiners.

50. It would be in accordance with a logical order to consider next the functions to be discharged by Chief Examiners, Assistant Examiners and Moderators (sometimes known as Revisers)†—severally, and in that order. It has however been found more convenient to deal with these points as they arise in the course of a general discussion of the technique of marking. This general discussion covers the next thirteen paragraphs (51–63).

51. The individual subject reports for the various Examining Bodies call attention where necessary to specific points in connection with the marking of this or that question or paper. It is not the intention here to go into these matters of detail, but rather to review briefly some of the broad general problems that arise in an examination of this scope and standard, in the light of the discussions that have been possible at the various centres.

52. There can be no general solution to these problems. The difficulties that have to be faced by the smaller Examining Bodies are not always the same as those that confront the larger ones: and

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\* In this connection one of the Investigators—himself a teacher of long experience—remarks: “It should be noted that University men mark Higher Certificate scripts when their summer term is over. Not so with the school-teacher examiners”.

† The indiscriminate use of these terms is a little unfortunate. The Moderator whose functions, as the Investigators understand them, are set out below (paragraph 54) is not the only person who undertakes revision of scripts—indeed revision is one of the main duties of a Chief Examiner.

when they are the same, the approach to them must inevitably be different. Moreover it is not always possible to lay down guiding principles that will be valid for all subjects.

53. The two-fold task that the Examining Bodies have to perform is responsible for many of the difficulties that arise. A compromise has continually to be sought between the technique most suitable for examining the ordinary Higher School Certificate candidate and the very different method that would no doubt be adopted if the selection of scholars were the sole object. The Examining Bodies are fully aware of the incompatibility of these two aims and the institution of special scholarship papers proposed by some of them will no doubt make it easier to do justice simultaneously to the pass candidate and to the scholar.

54. Any review of the arrangement for marking must start with the actual setting of the papers, for the whole effect of a question as an instrument for examining is not determined by the formal wording of the question papers. The type of answer envisaged by the examiner, the relative value that he intends to give to different points and to the whole question in relation to the rest of the paper must be known, in order to form a preliminary estimate of the potentialities of the question. To form this preliminary estimate is the first duty of the Moderator. It is important that in considering the paper he should have before him, at an early stage, clear indications of the intentions of the examiners in these respects—though it may be advisable for him to see the bare question paper in the first instance, in order to be able to form an independent estimate of possible reactions to it of reasonably prepared candidates. Moreover, however careful Moderators and setters of papers may have been and however extensive their experience, points of difficulty are certain to arise for discussion and decision in the early stages of the marking, and the Moderator should have a further opportunity of discussion at this stage. This is, in order of time, his second duty. There would be room, in almost all Examining Bodies, for enlisting, on these lines, a much fuller co-operation with Moderators. From this point of view the fact that the number of candidates involved in a given paper is small enough to allow one examiner to mark all the scripts concerned does not obviate the need for such a formulation of some kind of general marking scheme and a revision (or moderation) of that scheme in the light of the answers received. In fact it became abundantly clear during the Investigation that, even in such cases, it is of considerable importance that the basis of the marking should be thus clarified beforehand. At the same time it is not suggested that it is possible or even desirable in most subjects to approach completely objective marking in such an examination as this. The double function of the Examination cannot be adequately performed if the marking schemes are laid down too rigidly. A marking scheme, adequate and fair for the average candidate, may

do rank injustice to the able boy, and a complete catalogue of facts may gain greater credit than an able and original discussion. For this reason it is important for panels of examiners to make up their minds as to the qualities they are looking for in the scholarship candidate and, when they find them, to indicate this clearly either by a system of starring or by the allocation of a high mark, unfettered by too rigid a marking scheme or even ignoring such scheme altogether.

55. With the limited amount of time available it is often impossible, owing to the number of candidates involved, for all the work in one subject to be marked by one examiner. It is, however, often possible—probably more often than is so arranged—for all the answers to one paper or to one section of a paper to be marked by the same examiner, thereby avoiding the difficulties of attempting to equate divergent standards of marking. Numbers may be too large even for such an arrangement of the work, and it then becomes necessary to examine the mark distributions obtained by the various examiners with a view to standardisation. These distributions can and should be a valuable guide, but there are dangers in too automatic an application of standardising methods based on them. The number of scripts that can be handled by one examiner cannot, under the conditions of this Examination, be large enough to ensure beyond reasonable doubt that the samples dealt with by each examiner are statistically equivalent. It is therefore advisable that the adjustments in the mark lists of individual examiners indicated by the mark distributions should be confirmed by a careful examination of scripts by the Chief Examiner.

56. Even where one examiner marks all sections of a subject, it may still be important that there should be some investigation of the relative "pull" of these various sections, that is to say their influence in deciding whether a candidate passes or fails or which candidate gains a Scholarship. Evidence that sufficient attention was not always given to this point was gathered from (a) theoretical and practical papers in Science; (b) translation from and composition in a foreign language; (c) the Botany and Zoology sections into which the Biology of some Examining Bodies is divided. The whole problem may not be easy of solution—it is certainly not solved merely by giving to the various sections maxima in the proportion it is desired they should count. If no analysis is made, one consequence which may ensue, without the examiners becoming aware of it, is that one section of the work (say the practical paper in a Science) is mainly determining whether a candidate passes or fails and at the same time is having little influence in determining the position of the candidates at the top. It is not suggested that examiners may not wish one section to pull more strongly than another or that different sections may not be more important for different purposes—pass and scholarship. What is urged is that in

such cases some analysis of the marks is needed in order to reveal what is happening, so that chief examiners may be in a position to decide how the marks in the various sections should be combined in order that the final aggregate for the subject may achieve the purpose they desire. Without some such analysis it is not easy for examiners to have any clear idea as to the significance of the marks they are handling. For instance, before the pass level is fixed it appears to be the universal custom to discuss some borderline scripts. If the borderline is fixed by an aggregate of raw marks without any investigation into the relative pull of the various sections, it is by no means clear that the right candidates are emerging at the borderline for this discussion. A hurdle is sometimes set up in one or more sections of a subject to ensure that a candidate does not pass in the subject as a whole if he has revealed serious weakness in what are considered to be the essential parts of that subject. Such a device might well meet one important aspect of the problem, but it is not in itself sufficient. In the very small Examining Bodies it is of course possible to give individual attention to the manner in which each candidate has gained his marks.

57. If chief examiners in subjects of large entry are to carry out really thoroughly these various tasks of adjusting the standards of marking of their colleagues, of deciding how the marks in various sections of the subject are to be combined, including the handling of alternative papers, of fixing pass and distinction levels and reviewing borderline cases, it seems clear that they cannot leave them to the end of the marking process. A severe curtailment of the routine marking undertaken by such chief examiners so as to leave them more time, from the beginning, to devote to these, their important functions, is highly desirable. It might then even be possible, except in very large groups, to ensure that all doubtful pass candidates and all likely scholarship candidates have their work reviewed by the same persons. It is, however, realised that it may not be easy to pick out these candidates until all the mark lists are assembled, and that extra expense would be involved. Some Examining Bodies, by exchange of scripts and constant consultation between examiners, do at present materially lessen the labour and increase the effectiveness of their chief examiners. It is an even fuller development of this process and of the responsibilities of Chief Examiners that is urged.

58. The routine preparation of mark distributions undertaken by some Examining Bodies is also of very great help. The degree of reliability attaching to deductions from such distributions must inevitably depend on the number of candidates involved. Most Examining Bodies adopt some form of statistical control, if only to the extent of trying to avoid large fluctuations in the percentage of candidates passing from year to year. Much more than this might be attempted with advantage. Most examiners are possessed of

some idiosyncrasies—a tendency, may be, to give charity marks too easily to weaker candidates or a disinclination to give really high marks under any circumstances, with the result that their marks do not adequately differentiate between the candidates. A study of his mark distribution will usually reveal such tendencies to an examiner, and once known such faults can be guarded against. In this way these distributions can be a valuable instrument in the training of examiners in their novitiate, a very considerable saving of time to chief examiners for large subjects, and some security against their overlooking vital points by indicating where and on what lines their special scrutiny is most needed. At the same time it is not intended here to advocate an entire unqualified reliance on systems of standardisation based on these distributions, e.g. by comparing the percentile curve for the marks awarded in a paper with some standard curve. The fundamental assumptions underlying such a method and the choice of standard curve employed must inevitably be matters of human judgment having no theoretical claim to finality. On the other hand such a system probably presents, in the case of a large Examining Body, the best way of applying a human judgment consistently from subject to subject and from year to year. It is important in practice that such a system shall be elastic, giving reasonable latitude to chief examiners at all stages. One large Examining Body has built up a scheme of statistical control as thoroughly planned as may be which does provide adequately, in theory, for the modifying use of the chief examiners' discretion. It was however felt that, owing partly to lack of time and partly to lack of familiarity of examiners with the principles involved, there was definite danger at times of the system suffering from a rigidity which was not really intended. It was felt strongly by the Investigators that in order to secure the best results it is advisable that the Examining Bodies should be sufficiently large to enable some measure of statistical control to be usefully employed, but not so large as to occasion fears lest the statistical machine should take complete charge of the situation. After all, it is extremely difficult for examiners to arrive at suitable standards, reasonably consistent from year to year and from subject to subject, unless they have adequate samples for purposes of comparison, but on the other hand no amount of manipulation can remedy marking that does not in the first instance differentiate adequately and on proper grounds between the candidates.

59. The pass list in individual subjects having been settled, the decision as to which candidate shall have a Certificate is merely a matter of interpretation of the regulations. The only point deserving of comment here is the question of compensation. This word is commonly used in reference to two really distinct processes. If a candidate is just below the borderline in one subject, and would otherwise obtain a Certificate, the examiners in this subject may well take the view that they are not prepared to stake the reliability,

within such a narrow limit, of their estimate of the pass level to the extent of depriving the candidate of his Certificate. Compensation granted on this principle might be termed marginal compensation. On the other hand there may be no doubt whatever that the candidate has definitely failed in one subject necessary for his Certificate, but he may have done outstandingly good work in another subject. Most Examining Bodies have rules under which, within definite limits, such a failure may be compensated by good work elsewhere. Both in this major compensation and in marginal compensation the actual *modus operandi* varies from one Examining Body to another, but in effect there does not appear to be, in general, a great deal of difference in the limits for compensation, and the percentage of candidates passing in this way is not high. The whole process does, however, tend to enhance at times the difference in load between the various Examining Bodies, to which reference has already been made; seeing that, for instance, in some Examining Bodies it is possible to obtain a Certificate with a good pass in one Principal Subject and a pass in one Subsidiary Subject together with a compensated failure in a second Principal Subject. The rule with regard to entry on Certificates of compensated subjects varies, but the Investigators feel strongly that the practice followed by some Bodies of entering subjects allowed by a major compensation as if they had been passed at principal subject level gives a false impression of the candidate's performance.

60. The award of Scholarships, as distinct from Certificates, presents much more complicated problems. It is necessary here to weigh performance in one subject against performance in another. In the small Examining Bodies the only possibility is to discuss each case on its merits, and most of what is to be said here will refer to the methods used by larger bodies. Two major questions arise.

61. *How can standards of performance in two subjects be equated?* From an absolute point of view no final theoretical answer can be given to this question in the light of present knowledge. Some working hypothesis must, however, be found, and there are two main lines of approach in use. The first takes the view that it is a reasonable definition of equality of standard, provided the groups concerned are sufficiently large, to say that the work of a candidate  $x$  hundredths of the way down the list in, say, History is of equal merit with that of a candidate occupying a similar position in the Mathematics list. The usual methods of standardisation based on percentile ranks are then applied to give two such candidates the same mark. It is to be noted, however, that with these methods of standardisation, even with a given standard curve, the marks allotted to the top few candidates in a given subject are to a considerable extent arbitrary, and it becomes necessary to fall back on the personal judgment of the examiner as to whether the top candidates in his subject are exceptionally good, rather weaker than

usual or about normal, and to allot marks to these candidates based, within limits, on his verdict. Thus, in the rather important upper reaches, the method definitely loses that entirely objective character which may make it seem attractive.

62. For this reason it may be well to recognise from the first that the ultimate decision is bound to rest on the subjective judgment of examiners. It may indeed be argued further than this, that the basis of the method outlined in the last paragraph is not one to command general assent. Probably the abler intellects in our Sixth Forms are attracted more strongly to some subjects than to others. This fact is indeed recognised by those Examining Bodies who use percentile standardisation methods, and the curves for those subjects in which a greater degree of selection may be thought to exist are adjusted accordingly. Apart from this it may or may not be true that what is usually regarded as outstanding literary ability is as common in the population as, say, outstanding mathematical ability. In view of such considerations some Examining Bodies prefer a system in which each panel of examiners selects those candidates who in their opinion have done outstanding work in their subject and the relative merit of performances in various subjects is decided by discussion at a general meeting.

63. Both systems have their disadvantages. Probably indeed some examiners will always tend to be lenient and others always more exacting; some again will be more inclined than others to give way in a general discussion in favour of candidates in other subjects. Thus the number of candidates pushed strongly for an award in any one subject must depend somewhat on the character and temperament of the examiners concerned. Moreover, and this seems the important point, this can in effect happen equally well whichever of the two methods is used. That it will happen in the case where there is no statistical control is readily understood. For instance, in the case of one Examining Body which instructed its examiners to mark candidates who in their subjects were clearly of scholarship calibre with a double star, the Investigators were not satisfied that the considerable disproportion in the numbers of double stars awarded from subject to subject by any means reflected real differences in the intellectual calibre of the groups of candidates concerned. The fact, already noted, of the uncertainty of the standard marks to be allotted to the top candidates in a subject makes it possible for similar difficulties to arise here. For instance, in a case in which the percentile standardisation method was used, the Investigators felt that some candidates had gained Scholarships through being top or nearly top of what happened to be a comparatively weak group, the discretion of the examiners not having been sufficiently exerted against the effects of a routine standardisation.

64. *To what extent are Scholarships to be awarded on outstanding work in one subject, and how far on all-round good work?*—This second question is at bottom one of general policy and to this aspect of it

some consideration has already been given (see paragraphs 23-27). Obviously however it cannot be fully discussed in isolation from problems of examination technique. In all Examining Bodies the specialist Classics and Mathematics groups\* need special treatment on account of the higher degree of selection of the candidates. In the larger Examining Bodies steps are taken to ensure, either through the use of standardisation methods or by definite allotment, that the numbers of Scholarships awarded in the two main groups, Modern Studies, and Mathematics and Science, are approximately proportional to the number of Higher School Certificate candidates in these two groups. This is naturally not possible in the case of the smaller Examining Bodies, whose special difficulties in this regard are the subject of comment elsewhere. The method of award within these groups varies considerably. In most cases a preliminary selection of candidates for consideration is made on the basis of their aggregate marks in all subjects. In two Examining Bodies only is there any standardisation of marks in individual subjects before combining them. Similar considerations apply here to those put forward in discussing the combination of marks for different sections of the same subject. Unless some attempt is made to take into account the varying implications of a given mark in different subjects it is very difficult to know what significance, if any, can be attached to the final aggregate. Even though a very wide preliminary selection be made there cannot be certainty that some candidates worthy of consideration have not been excluded from the preliminary list, and, even if a double star system forms the main basis of the award, the psychological effect on an awarding committee of the low position of a candidate in order of aggregate in this list must be considerable, though this low position may not in any sense mean what it apparently implies.

65. Two main methods of deciding the final award are used : (a) award in order of aggregate of standardised marks, (b) award by discussion of the merits of individual cases by a committee on which all subjects are represented, preliminary lists of the candidates they wish to recommend having been drawn up by the examiners in each subject. The first is sometimes referred to as award on all-round performance as against award on outstanding performance in one or perhaps two subjects. An analysis of the actual awards does not justify such a description. In the first method the extent to which outstanding performance in one subject shall override all-round good work is decided entirely by the standard curve used—the extent to which it does allot overwhelmingly high standard marks to the best candidates in a subject. The choice of this standard curve must be an expression of the policy of the Examining Body in this matter. One large Examining Body used a scale on which the

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\* By the specialist Classical candidates is meant those who are examined in Group I (or Group A). Specialist Mathematical candidates are those who rely in the main on their performance on the papers in Advanced Mathematics.

normal mark for the top candidate in a subject was 360 and for the distinction borderline 280. The lowest boy awarded a State Scholarship scored 860, his standard marks in his three Principal Subjects being Physics 292, Chemistry 278, Biology 290, so that he had a distinction in two subjects—though by no means a high one—and just failed to get a distinction in the third. The lowest general all-round performance that would have gained a Scholarship would have been 287 in each of the three subjects (i.e. a little over the distinction mark in each). On the other hand a boy who scored 352 in English, 269 in History, and 241 in French totalled 862 and gained a Scholarship. This is clearly a case that can fairly be described as a Scholarship awarded on outstanding performance in one subject, and such are by no means uncommon in the lists of this Examining Body. On the other hand a candidate placed similarly to this last one in Examining Bodies using the second method of award failed sometimes to secure a Scholarship against another candidate showing a high, though not outstandingly high, performance in two subjects, because, apparently, the latter had two subject panels pressing his claims as against one. Even in the Examining Body which asked its examiners to mark with a double star candidates showing outstanding promise in their subject, and as a matter of policy paid considerable attention to these in their awards, there was a considerable number of candidates so marked who did not secure a Scholarship, while a candidate not double starred in any subject, but having a distinction in all his Principal Subjects, was elected. Thus while there is a difference from Examining Body to Examining Body and even from subject to subject in the same Body in the extent to which outstanding performance in one subject shall be the determining factor, this difference is by no means so great as appears at first sight and is moreover a matter rather of the policy of the Examining Bodies on the whole question than of the particular method used to implement this policy.

66. It may be well to give some statement of the more important conclusions based on this analysis of the working of the present system.

(a) On the basis of our present knowledge there can be no infallible method prescribed for the award of Scholarships. Whatever method be employed, it is well to recognise that it is ultimately very much a matter of a subjective human judgment.

(b) It is important for panels of examiners to make up their minds as to the qualities they are looking for in the scholarship candidate, and, when they find them, to indicate this clearly either by a system of starring or by the allocation of a high mark, irrespective of any routine marking scheme.

(c) Some degree of statistical control should be employed for the purpose of indicating and correcting such differences between subject and subject as may be due to idiosyncrasies of individual examiners, who must however be allowed reasonable latitude in their decision.

(d) The routine work of Chief Examiners should be lightened as much as possible to enable them to devote full time to consideration of the problem in all its aspects, and to familiarise themselves as far as possible with the work of the candidates they are recommending.

(e) That the extent to which outstanding performance in a single subject should decide the issue is not easy to define, but as has already been made clear (paragraphs 24-27) the Panel as a whole are unable to agree with certain proposals in this regard put forward by the Investigators for English and for History.

67. One piece of examination machinery is lacking to which many persons of experience attach great importance—at any rate for the award of University Scholarships—and that is a personal interview with candidates. The argument in favour of interview is based upon two considerations: firstly it is said that even in the testing of what may be called purely intellectual qualities the written examination may yield very unreliable results. In an interview under the right conditions a candidate may reveal special interests or some quality of aliveness or originality which the written examination had not disclosed. Secondly for a successful University career other qualities besides the intellectual are necessary. These the written examination does not even pretend to measure, but in an interview the opportunity for detecting them may be found.

68. These arguments are not infrequently adduced by those who have experience of the examinations for Open College Scholarships at Oxford and Cambridge. The Panel of Investigators while agreeing that any written examination may fail in the ways indicated would not be prepared to make a positive recommendation to the effect that for scholarship candidates an interview should form part of the Second Examination unless the conditions under which that Examination is conducted underwent radical alterations. In the first place the mere numbers of scholarship candidates examined would make an interview all but impossible for the larger Bodies. Perhaps an even graver objection could be urged by those who realise how difficult is the technique of interview. This is not the place in which to attempt a detailed examination of those difficulties. It will be sufficient to point out that three conditions at least are essential for success. Firstly there must be sufficient time; neither the candidate nor the examiners must feel pressed. Secondly the examiners must be persons of considerable experience in this work, and if there are several of them, they must be well enough acquainted with each other to be sure that their scales of value are in close conformity. Thirdly they must be not only experienced and skilful in the process of interviewing, but must be personally interested in, and well acquainted with, the conditions of the post or career for which the candidate is being interviewed. It is only in so far as these conditions are satisfied in the examinations for Open Scholarships at Oxford

and Cambridge that the interview can be expected to yield satisfactory results, but to ensure that these conditions could be satisfied in the Second Examination would seem to be impossible, or at best so difficult that the Investigators are not prepared to go further than to say that it might be worth the consideration of some of the smaller Examining Bodies whether they should undertake an experiment in this matter on a limited scale. In this connection the Investigators note that some Local Education Authorities attach considerable importance, for the award of their Scholarships, to interviews and to school records.

69. Local Education Authorities are represented on five of the eight Examining Bodies. Their claim to be represented is presumably based on the following considerations among others. They are responsible for the provision of facilities for Higher Education in their areas; at least one-half of the money to be found for examination fees is contributed by them and at least one-half of the sums expended on Local Education Authority Scholarships. Some of them again, afford substantial grants in aid to some of the Modern Universities. Finally they are in a position to acquaint themselves intimately with the point of view not only of teachers but also of parents. All these claims have considerable force. It is suggested however that the Second Examination in so far as it can be regarded as a gateway to the Universities transcends (if the expression may serve) purely local needs or aspirations. It would seem, then, that the purpose to be served by giving Local Education Authorities representation on Examining Bodies which control the Second Examination should be that of ensuring that due consideration is given to the opinions not of the authorities of any particular locality but of Local Education Authorities as a whole—in other words to their general educational policy.

#### *F. The Strain Imposed on the Candidates*

70. The charge is not infrequently brought against the Examinations that they impose an excessive strain on the candidates.

On this point the scrutiny of regulations, syllabuses, questions, scripts which occupied most of the Investigators' time could throw no light. From an enquiry, addressed to a group of Secondary Schools, it seems to be established that there is comparatively little strain—certainly no more than must be expected from any important external examination taken by adolescents. It arises occasionally when the candidate's physique is below normal or when he is the victim of nervous anxiety as to the result of an examination on which the whole of his future career will depend. And here the case may be noted of a very large Secondary (Boys') School with a reputation for great industry and a most brilliant scholarship record. The medical officer of this school reports that in a period of twelve years he could recall no more than eight cases of severe fatigue; in each instance the pupil completely recovered after a short period of repose.

71. There is however one feature in the system as it exists at the moment which if it does not conduce to excessive strain undoubtedly has a deadening effect upon the minds of the candidates. There is a strong incentive for candidates to sit for the Examination twice, often three times, and even occasionally (although rarely) four times.

The incentive is the desire to obtain the award of a State Scholarship or of a Local Education Authority Scholarship. The consequences, unfortunate in any case, are particularly so in those subjects in which the candidate is compelled to cover repeatedly the same field of work, if not actually the same set books. The Investigators are of opinion that, short of changes in the system far more fundamental than any which have hitherto been proposed by the Examining Bodies, this disadvantage of the present system cannot be entirely eliminated. They maintain however that it could be diminished if two conditions were to be imposed upon entrants for the Examination. The first condition is one the soundness of which could be argued upon other grounds than those here adduced. It is that between the taking of the First and the Second Approved Examination there should elapse an interval of not less than five school terms. A second condition might be that candidates should not be allowed to take the Examination more than twice.

72. To attempt however to impose this second condition might be resented as an infringement of personal liberty and it would perhaps be sounder policy to make a lower age limit effective. If this lower age limit were fixed at 17 years then the number of candidates likely to take the Examination more than twice would be negligible.

## CHAPTER 3

## LOCAL EDUCATION AUTHORITIES' SCHOLARSHIPS AND EXHIBITIONS

73. Some consideration of the problems involved in the award of Scholarships, and Exhibitions by Local Education Authorities comes within the terms of reference of the present inquiry. Presumably indeed the Investigators were intended to concern themselves only with two particular problems—the suitability of the Second Examination as an instrument for determining awards by Authorities and the actual manner in which use is made of this instrument. This being so the Investigators are not required to include within their purview those Authorities who select entirely according to the results of other examinations or without any examination at all.

74. The task of the Authorities is to select from a number of applicants those who both need and merit awards—merit them in the sense of showing proof that they are capable of taking full advantage of a University career. In so far as in selecting they make use of the results of the Second Examination they are in much the same position as the Board of Education in selecting State Scholars. And to that extent all the criticisms and recommendations made in this Report with regard to the suitability of the Second Examination as a selective examination apply equally to State Scholarships and to the Local Education Authorities' Scholarships.

75. But in the manner in which this instrument is used there is a difference between the State and the Authorities and it is that difference which should form the subject of the present chapter. Before going any further however it is necessary to make clear one difficulty which confronted the Investigators. It was not possible for them to conduct an inquiry into the selective machinery (besides, or over and above, the Second Examination) used by the Authorities on the same lines as those which they followed in the investigation of the Second Examination. It was scarcely within their competence to visit centres and interrogate officials even if the time and money necessary for such a procedure had been available. It appeared that only one course was open to them. Making use of the good offices of the Board of Education and of the Authorities themselves they were able by means of a fairly comprehensive questionnaire to obtain some notion of the methods adopted by those Local Education Authorities who made use of the Second Examination for determining awards. It remained to give as clear a picture as was possible of the general situation and to offer a few comments and suggestions. Clearly however an exhaustive treatment of the problems involved could not result from an enquiry conducted by means of a questionnaire in spite of the obvious good will of the Authorities and their readiness to furnish full and clear information on all the points included in that document.

76. The following then is a summary of the relevant facts of the situation :—

#### A. *Number of Awards*

It is not possible to deduce from the Authorities' replies even a close approximation to the total number of awards made annually, if only because so many of the Authorities do not give a fixed number. The sum appropriated in any year for awards is allotted according to the number of deserving candidates and the measure of their financial needs. It is certain however that on the average the number of Scholarships annually awarded, excluding awards tenable at University Training Departments, is between four and five times as great as the number of State Scholarships. Since 118 Authorities in allotting some £250,000 annually on these Scholarships make use of the Second Examination, it is clear that taken as a body they have a large stake in that Examination.

#### B. *Use made of the Second Examination*

77. Of the 145 Authorities who furnished answers to the questionnaire 118 take account of the results obtained by applicants in the Second Examination, but the importance they attach to the examination results differs widely. It is difficult to summarise the answers accurately; perhaps the most effective way will be to divide the Authorities into classes according to the part which they allow the Second Examination to play.

78. Thirty-eight Authorities state that they award their Scholarships on the recommendation of the examiners, eight of them qualifying this to the extent of saying that an Open Scholarship may be accepted instead, and two that some other examination may be accepted as entitling a candidate to the award of one of their Scholarships.

79. Twenty say that they award their Scholarships directly on the examination marks or, in Wales, on an order of merit.

80. Twenty-eight more make their awards "on the examination results" but not, in the great majority of cases at any rate (one or two answers are not quite clear on this point) so automatically as in the previous cases. There is either an interview with the candidate, or consideration of his school record, or a conference between the examiners and the Authority, or else some such expression is used as that the Authority considers the examiners' reports and makes its awards. In two or three cases it is stated that the Authority considers, but does not bind itself to accept, the examiners' recommendations.

81. Next, there are fifteen Authorities in which the possession of a Higher Certificate is a necessary condition of gaining a Scholarship; and finally seventeen which state that it is a factor—varying in force from "a determining factor" to "made a condition on one or two occasions".

82. In these last four classes also a number of Authorities accept an Open Scholarship instead of a Higher Certificate, and a few accept the Intermediate Examination. Two Authorities speak of accepting, in certain circumstances, Matriculation obtained through the School Certificate.

### *C. Apportionment between Different Examinations*

83. It sometimes happens that not all the schools in an Authority's area take the same Second Examination. Some Authorities, making awards to all who obtain a pass or reach a certain standard, experience no difficulty from this situation. Others, however, are confronted with the difficulty of dividing a certain number of awards between candidates some of whom have taken one Examination and some another. As shown below, seven Authorities have adopted a systematic or fully regulated procedure.

(a) A joint report is submitted by the three Examining Bodies concerned.

(b) Where only two Examinations (we may call them A and B) are in the field, then by agreement with the Examining Body for A, candidates from schools reading for the B Examination may take special alternative papers in English, French, Latin, German and History set by A but based on the syllabuses of B.

(c) Each Examining Body places in order of merit the candidates who have reached scholarship standard, and the Scholarships available—a fixed number 40—are divided among the Examining Bodies in proportion to the number of candidates reaching scholarship standard.

(d) The Scholarships available are divided equally among the five Examining Bodies concerned. A certain standard is imposed—(namely that a candidate to be eligible must do well enough to justify the expectation that he will obtain a good Honours degree). The candidates in each Examination are arranged in order of merit by the Examining Body and any Scholarship not won in one group is transferred to another.

(e) The awards are made on the results of the four Examinations taken. One of the four Examining Bodies collates them and presents a confidential report to the Authority.

(f) Three Examinations are involved, A, B and C. The examiners for A whose Examination is taken by most of the schools, make recommendations, which are invariably accepted. The candidates taking Examination B are considered by the Authority on the percentage of marks obtained in the Group Subjects, or their two best Group Subjects, when more than two are taken. The minimum percentage of marks for an award is approximately 55 per cent. of the marks possible, though usually a higher percentage than this is required. The minimum percentage of marks for an award corresponds very nearly with

that of candidates who take Examination A. (The Authority has noticed that A arranged the candidates in an order of merit strictly in accordance with the percentage of marks obtained in the three Principal Subjects irrespective of which subjects are taken.) The third Examining Body furnishes percentage marks and indicates the candidates it considers worthy of a Scholarship (whether this indication is always accepted is not actually stated. Only one school is involved).

(g) One Authority apportions the awards according to the percentage of marks obtained, irrespective of the Examination taken.

(h) Four Authorities refer the matter to special sub-committees. In one case the special sub-committee, the County Examining Board, is a body composed partly of members of the Education Committee and partly of elementary and secondary school teachers; in the others the composition is not stated. One Authority says that where necessary the Heads of the Secondary Schools will advise, but it is not clear whether they act as a committee or individually; and another accepts the advice of its Administrative Officers.

One of these special sub-committees gets special information from the examiners that candidates are up to scholarship level or not, the methods adopted by the others are not stated. The Administrative Officers usually advise the awarding of an extra Scholarship in doubtful cases.

Other Authorities reply as follows :—

(i) "The Committee in making awards have regard to the attainments of the candidates and the reports of their teachers". (This Authority makes it a condition that candidates shall have passed in one of three specified Second Examinations, and the number of Scholarships is not quite fixed "12-15 approximately").

(j) "Broadly speaking" any candidate who has passed the Examination is given a Scholarship.

(k) The Committee has before it details of the last public examination taken (Open Scholarship, Second Examination or First Examination), and a report of the Headmaster. Each case is then considered on its merits.

(l) No apportionment, usually the deciding factor has been ability to win an Open Scholarship as well as to pass the Second Examination.

(m) Each case is considered on its merits, regard being had to the results obtained in Open Scholarship competitions, the standard of work in the Second Examination and the Headmaster's report.

sometimes is—to examiners of proved skill and experience. On the second point it is not easy, in the absence of fuller information than was available, to make a definite pronouncement. Nevertheless it is difficult to understand what use could be made in awarding University Scholarships of results obtained by candidates in one of the First Examinations.

92. It is important to note that comparatively few Authorities rely solely upon examination results, and the Investigators are strongly in favour of the practice of taking into account the school records of candidates and the estimates of Heads of Secondary Schools. The Awarding or Advisory Committees, especially of the smaller Authorities are, or should be, in a specially favourable position for assessing in a candidate certain important qualities which a written examination does not set out to discover.

93. The Investigators have not at their disposal the information which would enable them to judge how far the award of Local Education Authority Scholarships has been justified by the University careers of the selected candidates. The following figures relating to four Local Education Authorities were included in their replies to the questionnaire and may be quoted here :—

(a) Out of 563 scholars holding awards made by three Authorities, 425 (75 per cent.) obtained first-class or second-class Degrees in Honours. By no means all the remaining 138 completed their University courses.

(b) Out of 217 scholars of a fourth Authority, 80 (nearly 37 per cent.) were awarded first classes—41 of them at Oxford or Cambridge. This includes first classes in Classical Moderations and in Part I of the Tripos Examinations.

94. Over against this must be set statements made by certain colleges at Oxford and Cambridge that some of their undergraduates who had won Local Education Authority Scholarships did not justify the awards. The evidence here is neither strong nor complete, but it is perhaps significant that similar criticisms of holders of State Scholarships from the same source were very much rarer. It would however be unreasonable to expect that the large number of holders of awards from Local Education Authorities should reach the same standard as the much smaller number of State Scholars, many of whom also hold Open Scholarships.

## CHAPTER 4

## PROPOSALS FOR MORE FUNDAMENTAL CHANGES

95. The general position disclosed in the previous chapters can be shortly described thus. Of the eight Examining Bodies four have decided upon important changes in the scope and standard of the Examinations for which they are responsible. Further it is known that at least one other Examining Body is considering changes of the same kind, and it may be that the remaining Bodies will in time follow suit. It has been made clear that the changes proposed commend themselves to the Investigators as generally sound. Finally, further and more radical changes are highly improbable within the next few years.

96. Nevertheless no one—least of all the Examining Bodies themselves—would pretend that the changes proposed, even with adjustments and modifications such as are recommended in various parts of the present Report, will have solved all the major defects of the system as that operated in 1937. And it was natural that the Investigators should have devoted considerable time and effort to search for entirely different solutions—to sketching out a possible long-term policy for the Examination.

97. The most obvious of such solutions would be the substitution for eight separate Examinations of a single centrally controlled Examination. Allusion has been made to this in a previous passage of this part of the Report: it is only necessary here to repeat that the majority of the Panel of Investigators are strongly opposed to such a policy and would continue in opposition even if they felt that it was likely to be supported by a considerable majority of the schools, (and in fact there is evidence that the majority of schools are hostile to it).

98. There were two proposals put forward by various Investigators which won a considerable measure of support from members of the Panel and are to be set out here in some detail. First, however, it must be made clear that after the most careful consideration of them the Panel decided not to make either proposal the subject of a major recommendation. Among the several considerations which influenced their decision two in particular may be mentioned. In the first place they were without that information on a number of cardinal points of administration and finance which would have enabled them to judge whether either proposal was capable of being carried into execution. Secondly the changes involved seemed to be of such a nature that the Secondary School Examinations Council itself could not give effect to them. Nevertheless the two proposals seemed at least to merit consideration by the Council who might in any event wish to see them still further discussed by the appropriate

Body or Bodies. It was decided therefore to present the two Schemes and to enumerate the arguments which in the view of the Panel could be urged in favour or against, without making any definite recommendation.

99. The first proposal (to which the second is alternative) is by no means a new one. Indeed it was considered and rejected by the Board of Education at the time when the State Scholarship system was being brought into existence. The proposal is that the task of recommending candidates for the award of State Scholarships should be taken out of the hands of the eight Examining Bodies and handed over to the Universities. The State grant for the award of Scholarships would be allocated among the Universities. These would have a choice between two methods of award. They could either award special scholarships which would be known, perhaps, as State Scholarships; or they could use the money for raising the value of existing scholarships in such a way as to make them tenable by boys and girls of very limited means, or finally they could combine both measures.

100. The advantage of such a scheme may first be considered.

(a) The problem of what is called the Double Function of the Examination is abolished at one stroke. The Examination would have but a single aim, to be a test of school work for the purposes of the Secondary Schools, whose measure of control of it could be increased and made more effective.

(b) Such a method of award would be in line with a tradition of very long standing in this country.

(c) The Universities themselves are the best judges of the kind of material they look for in the way of scholars.

(d) Selection by Open Scholarship methods is thought by some to be superior to that adopted, or likely to be adopted, by any of the eight Examining Bodies, since the number of candidates to be examined is smaller and it is very much easier to consider each individual case on its own merits. For example, more attention can be paid to school records and some personal contact with the candidates is possible during the days of the examination.

If it is urged that diversity of standard between one examination and another would be even wider than at present the answer is that the present objections against diversity would apply no more under the proposed system than they apply when, for example, different business firms are recruiting personnel. Each firm knows best what it requires and has the strongest incentive conceivable for making its selection effective. Moreover, even granted that there would be a diversity of standard, there would be for every candidate uniformity of opportunity. That is to say, each candidate could choose the

examination in which he intended to compete. At present he is very rarely allowed to choose which of the eight Examinations for the Higher Certificate he will take.

In this connection however it is possible that not every one of the English Universities would wish singly to conduct the whole of its own examination. It might be found convenient for certain of the modern Universities to form themselves into a group just as colleges at Oxford and Cambridge have done for many years. Such a grouping would not prevent each University scrutinising the scripts of all candidates in whom it was interested as happens at present in groups of Colleges at Oxford.

(e) The objections now raised in certain schools that boys and girls are often compelled by circumstances to take the Second Examination twice, thrice and even four times if not on exactly the same syllabus (including list of prescribed texts) at any rate on closely similar lines would disappear simply because the examinations for Open Scholarships have no syllabuses.

(f) Since the examinations for Open Scholarships are mostly held in December, January and March, the candidate who wins a Scholarship would remain at school for one or for two terms before he entered the University. In that time he could recover from the strain imposed by the effort of competing and could pursue a course of studies entirely unshackled by examination requirements. This indeed would hold good only if the Local Education Authorities also allowed their awards to be made on the Open Scholarship system. Further reference to this possibility will be made presently.

(g) The scheme could be used with great advantage to supplement the present meagre provision of scholarships in certain subjects.

(h) Under the sixth point (f) in favour of this proposal, allusion was made to Local Education Authority Scholarships. To recapitulate part of what has been said in the chapter of this Report which deals with the whole subject of these awards, a very difficult problem confronts an Authority which makes its awards upon the results of the Second Examination, when not all the Secondary Schools in its area take the same Examination. To evade this difficulty some Local Education Authorities restrict their awards to candidates taking the Examination of one particular Body—to the disadvantage, the Investigators submit, of the schools. If now the present proposal came into force and if the Authorities were to delegate to the Universities the task of awarding their Scholarships in the same way as State Scholarships would be awarded, then this problem of comparing what it is so difficult to compare would be removed.

(i) The excessive concentration of State Scholars in Oxford, Cambridge and London would be avoided.

101. Of the arguments which can be adduced in opposition to the scheme, some controvert points made above in its favour.

(a) It is disputed whether in fact the Open Scholarship system of selection is superior in every respect to the present system or the modifications of it which have already been approved by the Secondary School Examinations Council. It has already been mentioned (see paragraph 7) that the State Scholars have established an excellent record of success at the two older Universities and that in those two Universities many of the College Authorities have expressed themselves as satisfied with the material which reaches them in this way.

(b) Indeed the examinations for Open Scholarships have by no means been exempted from criticism ; and while it may be true that the Universities know what they want, it does not with entire necessity follow from that that they know what is best for their students. Here it is only fair to add that the fiercest criticism has been directed against the method of examining for Open Scholarships in Science and in Mathematics, but in respect of all subjects it would be urged by many that the school pupil released from any necessity to take the Second Examination and preparing only for an Open Scholarship might indulge in excessive specialisation. Indeed it is said that this is what actually does occur now in certain of the schools which do not take the Second Examination.

(c) While it may be that under the proposed scheme the schools would obtain a larger measure of control of the Second Examination, it is not certain that they would have any effective control of the Scholarship examination. For many years the schools have complained of the way in which certain examinations for Open Scholarships have been conducted, but they feel that little or nothing has been done to meet these complaints.

(d) The scheme substitutes for one Examination a multiplicity of examinations. It is possible to imagine a boy or girl carrying out a veritable winter pilgrimage from one examination centre to another in quest of a Scholarship—a prospect which could not be viewed with equanimity either by the pupils or by their teachers. It is true that this objection would be lessened if some of the modern Universities combined into groups as was suggested above, but it would by no means disappear.

(e) There would be a danger—and there is some evidence for this—lest brilliant pupils should be urgently pressed forward so as to compete for an Open Scholarship in their fourth term in the Sixth Form. Again it is often stated that most Open Scholarships are won by pupils who are in their third year in the Sixth Form. Under the present system those pupils whose parents cannot keep them at school for a third year in the Sixth

may nevertheless be enabled to proceed to a University with a State or Local Education Authority Scholarship. Now, if both State and Open Scholarships were awarded in the same way as Open Scholarships, these pupils would be very hard hit and all chance of a University career might be taken away from them.

(f) There is no strong evidence that the existing system imposes an undue strain upon candidates.

(g) As has already been said there are involved many considerations of an administrative and financial order which the Investigators do not feel themselves competent to discuss. They note however that amongst other problems arising under the scheme there is one in particular which would face the State and, if they came into the scheme, the Local Education Authorities. A decision would have to be made as to how a given total grant from the Treasury would be apportioned among the different Universities. Nor can it be assumed that either the State or the Authorities would—or could—apportion grants without claiming some measure of control. It would remain to be seen whether in these circumstances the Universities themselves would welcome the proposal.

102. The second proposal—alternative, as has been said, to the first—is entirely different in character and represents a somewhat less fundamental departure from the existing system. Put very briefly it amounts to a suggestion that the scholarship side of the Second Examination should be not wholly but very largely centralised. The Scholarship candidate would, in effect, have to take two examinations. The first of these would be the Higher School Certificate Examination. Under the scheme now being considered neither State Scholarships nor Local Education Authority Scholarships would be awarded upon the results of this Examination; the need for special scholarship papers would thereby disappear. Candidates for State Scholarships would have to reach a certain standard of performance in this Examination—for example they would have to stand within the top ten or twelve per cent. of all candidates in their subjects in order to qualify them for admission to the second examination which would be the Scholarship Examination proper. This would be controlled by a Central Examining Board. There would be no special examination syllabuses but the common elements in the syllabuses of the Higher School Certificate Examinations would provide all the necessary material for the setting of questions.

(a) Of this scheme, the first advantage to be noted is that so far as the award of Scholarships is concerned, the existing disadvantage of diversity of standard vanishes. This gain would be particularly appreciated by Local Education Authorities.

(b) The first part of the Examination would have only one function—the award of Higher Certificates.\* Therefore there

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\* Universities however would not necessarily be precluded from using the Second Examination as a matriculation test—or part of such test.

would be no problem as to whether Distinctions should be awarded on Advanced or Ordinary (non-scholarship) papers or whether Subsidiary Subjects should be taken into account for the award of State Scholarships.

(c) If the Local Education Authorities' Scholarships were to be awarded in the same way as the State Scholarships, then those Authorities could no longer have the same objection to each Secondary School in their areas taking whichever Second Examination it considered best suited to its needs. In the non-scholarship part of the Examination the influence of the schools, the Local Education Authorities and the Board of Education could be exercised in the same way as at present.

(d) The Central Board for the Scholarship part of the Examination would be able to make a more equitable allocation of Scholarships between the different subjects than perhaps is at present possible, at any rate for the smaller of the existing Examining Bodies, and the standard from year to year would remain far more constant than at present.

(e) It may be assumed that the total number of candidates in any one subject would not be so large as to make it necessary to employ more than two examiners—which would very much reduce the difficulty of securing uniform marking. Arrangements would naturally be made for a revision of scripts at or near the borderline for awards and the reviser would preferably be a person specially appointed for this purpose.

(f) The Central Examining Body would be able to follow a uniform policy in the matter of making awards—for instance as regards the relative weight to be given to performance and to promise.

(g) The problem whether an interval between taking the 'ordinary' papers and taking the scholarship papers is advisable or whether both sets should be taken more or less concurrently does not appear to be insoluble.

103. So much for the advantages which it is claimed would result from the adoption of this scheme. But certain objections have been urged against it which must next be considered.

(a) If the proposal to set the scholarship papers on ground common to the existing eight Second Examinations is adopted, then each Examining Body will be hampered when it wishes to introduce changes into its syllabuses in any subject but by so doing it should reduce the amount of ground common to all the syllabuses and so affect the scope of the papers in the Central Scholarship Examination. And although it is true that the Body setting the scholarship papers might decide to dispense with a syllabus in the same way as the examiners for Open Scholarships, there are grounds for thinking that for the selection of scholars in certain subjects a syllabus is a positive advantage.

Thus the Investigators in Modern Languages consider that it would be a mistake to give candidates no guidance in regard to literature to be studied.

(b) Although the scheme uses the first part of the Examination, i.e. the 'ordinary' Higher School Certificate papers, as a qualifying test, yet in effect, so far at least as all who aspire to Scholarships are concerned, both parts would be competitive, and inasmuch as a just selection of candidates to proceed to the second part would be an important and responsible task, examiners would be strongly tempted to introduce questions of a type calculated to produce a 'good spread of marks' at what would be the borderline for qualification to sit for the second part. And this would not improve the first part of the Examination from the point of view of the non-scholarship candidate, since a change may mean a reduction in the amount of ground common to all the Examinations and thus altogether it is difficult to believe that the second part of the Examination will not tend to influence the first part in an increasing degree from year to year.

(c) The centralising tendency is open to various objections. Experiments would be less willingly undertaken in the scholarship part of the examination, with the result that it would become stereotyped. As far as Scholarships were concerned everything would hang upon one examination. So long as that remained efficient in a high degree, there would be nothing to complain of, but failure would be disastrous. In the existing system there is much of positive advantage in diversity of method that at the worst not all the eight Second Examinations could be seriously inefficient at any one time. Yet again the proposed central examination would not and could not have in the same degree that direct contact with individual Secondary Schools which the present Examining Bodies sedulously cultivate.

(d) But by far the most serious argument against the proposal remains to be stated. It was claimed in its favour that the numbers to be examined in the second or scholarship part of the Examination would be small. This would be so if only State Scholarships were in question. But there are the Local Education Authority Scholarships also to be considered. If these are to be awarded on the first part of the proposed examination then all the old difficulties crop up again. But if they are to be awarded on the second part, like the State Scholarships, then the numbers to be examined will be very great. It has been explained in a previous paragraph that the number of Local Education Authority Scholarships is to some extent indeterminate. Nevertheless it is probable that 1,500 is a moderate estimate. There are 360 awards of State Scholarships, but this does not bring the total number of awards to 1,860 because a

large number of candidates would hold State Scholarships as well as Local Education Authority Scholarships. Nevertheless, the number of awards might easily amount to 1,600. Now unless the selectivity of the first part is made much finer than is contemplated in the proposal, it will be necessary in the second part of the Examination to examine at least four aspirants for each award. This gives a total of over 6,000 candidates. In 1937 the largest number of candidates examined by any one Examining Body was well under 5,000. Even if only three aspirants were examined for each award, the number would approach 5,000. For the purposes in view, therefore, it would be necessary to set up a new Central Examination larger than the Higher School Certificate Examination of the largest Examining Body.

104. Such are the arguments for and against the proposed scheme as the Investigators saw them. They came to the conclusion that to proceed any further in the consideration of it would be inadvisable until certain administrative and financial problems involved had been solved. And a discussion of these, as has already been said, hardly seemed to be within their competence. The main administrative problem is the constitution of the very important Central Body which would be responsible for the whole of the second part of the Examination to be taken by some five or six thousand candidates. The relations of this Body to the several Bodies controlling the first part of the Examination would have to be fixed. The financial problems are obvious. Offices must be built or hired and must be kept up; and there must be a Director or Secretary as well as a responsible Committee or Board and a clerical staff and there are the expenses incidental to the employment of panels of examiners, revisers, awarders and so forth.

## CHAPTER 5

GENERAL CONCLUSIONS AND SUMMARY OF  
RECOMMENDATIONS

105. The system of Examinations as it existed in 1937, although complicated and exhibiting many defects, does not call for the immediate application of drastic reforms. The Panel of Investigators recommend gradual improvement by successive modifications. At the same time they present (in Chapter 4 of this part of the Report) two proposals made by some of their number for fundamental changes. Although the Panel of Investigators as a whole were not disposed to recommend the adoption of either proposal, they felt that these were of sufficient interest and importance to merit the attention of the Secondary School Examinations Council, more especially if the Council, as a result of the present Report, should wish to consider a long-term policy of changes (paragraph 5).

106. The Investigators do not regard it as a function of this Examination to test the whole range of studies undertaken by pupils in Secondary Schools during their career in the Sixth Form. Without desiring to propose a rigid formula they suggest that the range to be tested should be such as might have occupied not less than two-thirds and not more than three-quarters of the pupils' study-time (paragraph 10).

107. The Investigators approve the introduction of special or advanced papers to be taken by candidates for Scholarships and the proposal to change the nature of the papers to be taken by the other candidates (paragraph 11).

108. In those Examinations in which special papers are set to be taken by candidates for Scholarships there is a danger lest such papers should be taken by a number of candidates for whom they are wholly unsuitable. The investigators recommend that a qualifying standard should be fixed in the non-scholarship papers, and that the work on the special papers of candidates not attaining this standard need not be marked. At the same time that standard should not be too rigidly fixed. The Investigators are not in favour of an interval between the taking of the two sets of papers—scholarship and non-scholarship (paragraphs 11 (a) (ii) and (iii)).

109. The special Scholarship papers should be set on the same syllabus as the non-scholarship, except in Modern Languages and in certain of the papers in Advanced Mathematics (paragraph 11 (a) (iv)).

110. As regards the standard of difficulty of the non-scholarship papers, any changes are deprecated which would result in a pass being allowed at a lower level of ability and attainment than in 1937\* (paragraph 11 (b) (i) ).

111. Distinctions should be awarded only on the special or advanced papers, but work of outstanding excellence on the other papers should have recognition. Perhaps the mark " Good " might be attached to such work (paragraphs 11 (b) (ii), and 11 (b) (iii) ).

112. That in general there should be a closer agreement among Examining Bodies as to the scope and aim of Subsidiary Subjects and the level at which they should be examined. In particular the Investigators recommend :—

(a) That these subjects should be examined at a level intermediate between that of a Principal Subject in the Higher Certificate Examination and of a subject in the School Certificate Examination.

(b) That Subsidiary Subjects should be regarded as part of the full Higher Certificate Examination and should not be examined separately.†

(c) That the examination of Subsidiary Subjects should be based on the assumption that the school course in these subjects has extended over at least five terms from the time of the taking of the School Certificate.‡

(d) That a candidate's performance in Subsidiary Subjects should not be taken into account for the award of State Scholarships except as between candidates adjudged equal in respect of their performance in their Principal Subjects (paragraphs 14–20).

113. The Investigators, while strongly opposed to any line of action calculated to stereotype the Examinations, see in the disparity of numbers of candidates one obstacle in the way of approaching uniformity of standard. Such uniformity is more likely to be established between Examinations when the numbers of candidates are large enough to admit of statistical control but not so large as to occasion a risk that the statistical machinery may take charge (paragraphs 22 (c) and 28).

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\* The Secondary School Examinations Council is of opinion that the result of the changes approved by the Investigators—the separation of the " Scholarship " questions from the " Pass " questions—would and should be to raise the percentage of candidates gaining a Higher School Certificate.

† The Secondary School Examinations Council does not consider that this limitation is practicable.

‡ But there are many candidates who will have to take the Examination after one year upon an increased time allowance and the Secondary School Examinations Council consider that provision should be made for such candidates.

114. (a) The Examination should not be open to pupils below the age of 17.

(b) Five State Scholarships (three for boys and two for girls) should be allotted to each Examining Body irrespective of the total number of candidates taking its Examination. The remaining State Scholarships should be divided among all the Examining Bodies in proportions calculated upon the number of candidates taking the Examination for the first time\* (paragraphs 33-35, 72).

115. (a) The term of appointment for Chief Examiners should be longer than two years.

(b) When there are two Chief Examiners for one subject they should not retire simultaneously (paragraph 49).

116. It is considered inadvisable that executive officers of Examining Bodies should act as Examiners (paragraph 49).

117. The duties discharged by Moderators are particularly important and on most Examining Bodies there is room for a fuller co-operation than exists between Examiners and Moderators. It is suggested that serving Teachers in Secondary Schools are particularly suitable persons to be entrusted with the work of Moderation. (Paragraphs 49 and 54.)

118. The amount of routine marking undertaken by the Chief Examiner should be severely curtailed in order that he may have time in which to adjust the standard of marking of his colleagues, to decide how the marks in various sections of the subject are to be combined, to fix pass and distinction levels and to review borderline cases. (Paragraph 57.)

119. The practice followed by some Examining Bodies of entering on a Certificate subjects allowed by a major compensation as if they had been passed at Principal Subject level gives a false impression of the candidate's performance. (Paragraph 59.)

120. The opinion of Local Education Authorities should be represented on all Examining Bodies whose Examinations are taken into account for the award of Local Education Authority Scholarships and Exhibitions. (Paragraph 69.)

121. For recommendations with regard to the examinations in the several subjects, the Subject Reports (Part II) should be consulted.

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\* The Secondary School Examinations Council is not satisfied that the solution proposed is necessarily the best and suggests that the matter requires further consideration by the Board of Education.

## PART II

## PREFATORY NOTE TO THE SPECIAL SUBJECT REPORTS

The part of the Report next following would have gained in ease of reading if the several contributions of the Subject Panels had been drafted on a uniform pattern. It was felt, however, that close uniformity could only be attained by some restriction of the freedom of the Panels. It thus comes about that certain matters have been treated of in these Special Reports which might be thought to have been more in place in Part I of the Report. For example, the Investigators in English, in History, and in Science have made certain suggestions for important changes in the method of award of State Scholarships in their subjects. These suggestions are referred to in Part I, but something is gained by retaining them in the Special Reports where they can be read in a particular context.

## SUBJECT REPORTS

### I.—ENGLISH

*English as a Principal Subject in the Higher School Certificate.*—The Investigators have found that on the whole the examination as a test of two years' work in the Sixth Form is fulfilling its function more adequately than might have been anticipated. In a number of centres the 1937 syllabus is being revised and, in the opinion of the Investigators, these proposals will tend almost without exception to improve the examination. None the less the examination as at present conducted is open to a number of criticisms:—

(1) *Variation of standard.*—It has been shown in Part I of this Report how difficult it is to assess variations in standard where syllabuses and examination arrangements differ widely. Despite this, the Investigators coming to the end of their labours, after having carefully scrutinised a large number of scripts, find it difficult to resist the conclusion that divergences of standard do exist. In one centre the quality of the pupils was so poor that the examiners must have found it difficult to maintain any standard. In another, the question papers were directed more towards the scholarship than the non-scholarship candidates. In a third, the fact that the examination serves an Intermediate requirement affected the examination as a whole.

(2) *Syllabus and Examination Papers.*—There still remains in the 1937 examination considerable variation in the syllabuses and load of work. The revised proposals, where they exist, have however a large number of common features. It appears accordingly that by consultation among the Examining Bodies a greater measure of unity could be obtained without the sacrifice of any autonomy, and this is a step which would be eminently desirable.

The Investigators have the following comments and proposals to offer on the syllabuses:—

(i) They realise that the question of whether a period of literature should be presented at this stage is a difficult one. Superficially, a period would appear to have numerous advantages, as providing opportunities both for correlation with History, and for continuity of study. But as a result of experience gained in this enquiry the Investigators are of opinion that these apparent advantages do not in fact exist. They are convinced that the period syllabus leads in practice to a study of a number of set books, and, since these books are chosen from a period, they are often less suitable than books chosen from a wider range. It seems likely that, if a fairly long list of books were prescribed on the sole ground of their suitability for the candidates, and arranged in chronological order, teachers would often choose a selection of books with a chronological arrangement, and thus preserve in their work the sense of continuity in literature.

(ii) The number of set-books varies, and in most centres is too large to allow of the type of study appropriate to this stage. Questions accordingly tend to be of the reproductive type and to put a premium on memory rather than understanding. This seems to be a matter upon which more uniformity of practice should be secured, and the Investigators have recommended in the reports that the number of set books should be restricted to some nine or ten. They have also, as a corollary to this, recommended the abolition of the distinction between books set for "detailed study" and "general reading". Such a distinction, though made in certain syllabuses, does not seem to be reflected in the questions or in the reading of the candidates.

(iii) Some of the Examining Bodies have introduced questions of a new type which the Investigators particularly welcome and to which in their reports they attach the title of a "comprehension" test. By this they mean a test distinct from, and, as they think, preferable to that afforded by the usual type of context question. They suggest that the candidate be required to summarise the argument, comment on the vocabulary and note features of style and form in passages of adequate length selected from the set texts. Nor need the "comprehension" test be interpreted, if indeed it can be interpreted, so as to exclude tests of the candidates' ability to appreciate elementary literary values, especially at the scholarship level.

(iv) They would recommend that no text-books on the language be prescribed, and that questions on this part of the syllabus (e.g. questions on vocabulary and syntax) should be related to the texts actually studied by the candidate. The practice of prescribing "language" text-books and setting questions drawn directly from those text-books has been found to encourage little more than unintelligent memory work, which leaves the candidate often enough quite unable to apply to his own reading the principles which he has had put before him.

*English as a Subsidiary Subject in the Higher School Certificate.*—The variation of syllabus and standard is far greater than in the Principal Subject. So widely, indeed, do the standards of the Examining Bodies vary that no comparison is possible. The Investigators in English would prefer that the subject should be abolished as a subsidiary one; if, however, this is impossible, they would prefer a portion of the syllabus of the principal subject as a subsidiary syllabus. It is, however, their considered opinion that subsidiary papers should form no part of the Scholarship examination.

*English as a State Scholarship Subject.*—The position of English as a State Scholarship subject is unsatisfactory. This situation arises not so much from the dual purpose of the examination itself which, in this as in other respects, is working better than might have

been expected. Nor does it arise in any marked degree from variation of standard among the Examining Bodies ; such variation exists ; but not, so far as the Investigators in English have found, to such an extent as to cause serious injustice as between the best candidates at the various centres. It arises from the fact that with many Examining Bodies State Scholarships are awarded, not on performance in English as a single subject, but on performance in an aggregate of subjects. This is a principle to which the Investigators in English, as a result of experience gained at the eight examining centres, entertain the strongest objection. The subject does not primarily demand information, and promise, at this stage, is more important than performance. Ability may no doubt be selected on " aggregate " performance, but not ability of the kind appropriate to scholarship awards in this subject ; the industrious all-round type of candidate is favoured at the expense of the candidate who shows genuine promise in the one direction. This, together with the fact that English is apt to be insufficiently regarded within the aggregate, means that, in some cases, it is unduly difficult, or even impossible, for a candidate to obtain a State Scholarship on his English work only ; and the situation is aggravated by the paucity of scholarships available for the subject at Universities. Until it is remedied, English can never take its proper place among other branches of humane learning.

The Investigators may now go on to offer some recommendations for the examination of English at the State Scholarship level.

### *Proposals for Scholarship Awards*

(1) The Investigators in English are of opinion that the present system, with modifications, may be made to afford a basis for scholarship awards. They believe that a number of deficiencies in the method of award would remain ; but those deficiencies are known ; and they would proceed cautiously towards any possible substitution of an entirely new system of which the virtues might be more apparent than real.

They would prefer a system under which (i) an adequate performance in the Higher School Certificate Examination would form a condition of taking the Scholarship Examination ; and (ii) candidates entering for the Scholarship Examination for the second time would not be compelled to repeat the Higher School Certificate papers, but would take the scholarship papers only, together with a translation paper from a foreign language. But the majority of the Panel have declared against this method of award.

The Investigators assume, however, that the present system will be modified so that :—

(i) no candidate will sit for the Higher School Certificate and Scholarship Examination more than twice :

(ii) that there will be a Scholarship paper as well as the ordinary Higher School Certificate papers.

The Investigators would welcome a system by which the scholarship candidate in English should offer three subjects (including English) at the ordinary level, together with a scholarship paper in English. At least one of the subjects would have to be a language, ancient or modern, other than English; and some candidates would no doubt offer two languages. They are, as already stated, strongly of opinion that the scholarship award should not be on the aggregate. The candidate would have to reach an agreed level (above Pass) in all three subjects. The Scholarship would be awarded on his performance and promise as shown in all his English papers (ordinary papers and scholarship paper). Each centre would, it is hoped, order a searching re-scrutiny of the scripts before the final mark was agreed upon.

It is hoped that each centre would be able to make adjustments in its set texts so that candidates taking the Examination a second time would not be repeating the syllabus of their first entry in its entirety. An oral examination should form part of the scholarship examination. This is necessary partly owing to the inexact nature of the subjects and to the importance of detecting promise, and partly on grounds which apply to the examination of modern languages generally.

(2) If the scholarship award were at any time separated from the Higher School Certificate entirely, the Investigators have reached the conclusion that the task would be best performed by the Universities.

The advantages of a University examination are that the Universities would select their own pupils, and that their examiners would select rather more on promise than on pedestrian performance. The Higher School Certificate would thus be freed from its double function.

At the same time the Investigators would emphasise strongly that English, for a number of reasons arising out of the history of University education, is represented with marked inadequacy in the number of scholarships at present allotted to it by the Universities themselves. This balance would have to be rectified if English studies were to be treated justly under a University State Scholarship Scheme.

## 2.—HISTORY

How far is the Higher School Certificate Examination in History serving its double function as (1) a test of two years' unspecialised sixth-form work and (2) a means of choosing the State Scholars? Beyond all others, this question has engaged the consideration of the panel of Investigators concerned throughout this investigation and the present report is intended to summarise their conclusions.

The consideration of these questions was complicated by the fact that new regulations, to come into force variously in 1938 or 1939, have been made at each of the centres except the Central Welsh Board. The motives for and the nature of these changes in relation to the whole Examination are fully dealt with in the general report, but it is safe to say that in History, as in other subjects, they are in themselves an admission by all centres that the Examination is not adequately performing its double function. In respect of History, the Investigators have recorded their opinion on the varying proposals of the different centres in their special reports. So far as any generalisation is possible, the Investigators consider that they are a step in the right direction for the scholarship candidate, but that for the ordinary candidate they will make the Examination rather more factual and less educative than at present, and so render it inferior for *all* as a preparation for a University course. Further, it is evident that the new History proposals further accentuate the differences in the difficulty of the papers set and the load of work between different Examinations. However they work out in practice, the Investigators were satisfied that the new proposals are too tentative to effect any radical improvement in the Examination.

The next step was to analyse as closely as possible the objections which had given rise to these new proposals, and in this matter the History Investigators are persuaded that:—

(1) A scrutiny of the History work done in the Examination in 1937 provides no serious evidence that the existing syllabuses are of a higher standard than should reasonably be demanded after two years' advanced work.

(2) The existing Higher School Certificate Examination is seriously inadequate as a means of choosing State Scholars in History. It not seldom fails to pick the right candidates; and even when it does, the candidates commonly achieve their results by a more intensive and detailed knowledge of common text-books, rather than by wide reading and originality of mind. The *approach* of even the best candidates to the Examination is hardly distinguishable from that to the School Certificate.

In view of these findings the Investigators decided to limit their inquiry to the second and more pressing question, the solution of which must logically precede any general reform of the Examination. After as careful an examination as the time would allow, they

arrived at the opinion that the inadequacy of the Higher School Certificate Examination as a means of picking State Scholars in History springs from the following causes :—

(i) The object of the State Scholarship, so far as History is concerned, is that the candidates who show most promise in History, should read History Honours at a University. This object is not achieved by the present system, by which the State Scholarship is in fact only granted on distinction marks in not less than two subjects.

(ii) Further, the highest candidate in History is at present the pupil who gets the highest aggregate in three papers. But the pupil who gets the highest aggregate is not necessarily or even generally the most promising. It is a quantitative rather than a qualitative test, and performance is overloaded at the expense of promise.

(iii) The examiners have not the time to give the care necessary for co-ordinating their individual results and re-reading the scripts systematically.

(iv) The present system omits entirely the important factor of personality. There is no *viva voce* examination and no machinery for ascertaining the views of the schoolmasters on the character and promise of their more outstanding pupils.

Without claiming that all these difficulties are peculiar to History, the Investigators do feel, after prolonged discussion with the other sub-panels, that they are more serious and under the present system more insuperable than in Mathematics, Classics or Science: that, in short, History—and perhaps English too—is in rather a peculiar position. For this reason the Investigators would record their opinion that, for the award of History Scholarships—

(a) the State Scholarship Examination should be completely divorced from the Higher School Certificate ;

(b) that the State Scholarships in History would be best awarded by the Universities in such a way that each University itself should examine the scholars it would later teach.

The Investigators would like to point out that these conclusions are supported by the close analogy of the Oxford colleges, which hold two annual entrance examinations—a scholarship examination to pick boys of peculiar promise, and a Matriculation examination to select the commoners. This double system is attended with many inconveniences, but experience has proved the impossibility of picking both kinds of students on a single examination.

The Investigators, while feeling that the solution offered above is the right one, have also carefully considered what improvements could be effected within the existing machinery. If, indeed, the State Scholarship Examination cannot be separated from the Higher School Certificate, then they would urge that, though the History

candidate must take the whole Examination the State Scholarship shall be awarded on the History papers alone. This could be effected by some such scheme as the following :—

(a) *For candidates entering for the first time* (2 years or more after the School Certificate)—

- (1) Ordinary papers in English History.
- (2) Ordinary papers in European History.
- (3) Special subject.
- (4) General paper.

These History papers to be combined with a pass in the Higher School Certificate Examination, as a whole, in 2 other subjects, of which one must be a foreign language, at an agreed standard.

Scholarship candidates to be assessed for State Scholarship on History papers only.

(b) *For candidates entering for the second time*—

Papers (1,) (2,) (3,) (4) as above, together with translation from a foreign language.

No other subject to be taken.

This arrangement would meet some of the major defects of the existing system, so far as it is an examination for State Scholarships. The success of the scheme, however, would depend upon securing a far closer co-operation between examiners than obtains at present in any of the Examining Bodies, particularly in respect to the final revision of the more important scripts.

## 3.—GEOGRAPHY

The position of Geography as a Principal Subject in the Examination has improved since the last investigation, and the total number of candidates has greatly increased. It can be combined, without differentiation of syllabus, with either Science or literary subjects in the Examination of most of the Boards. We consider that this freedom should apply generally.

We found marked divergence between the syllabuses of the various Boards both in scope and emphasis. We consider the following items inappropriate :—

- (a) So specialised a study as the History of Geography.
- (b) The setting, as a special region, of (i) a very small area, e.g. France, Germany, or (ii) vast aggregates of territory covering half or more of the land surface of the globe.
- (c) Strong emphasis upon detailed work in purely physical or mathematical geography.

While complete uniformity is undesirable, there is a large measure of common ground which could be made the agreed common basis of all Higher School Certificate syllabuses, viz. :—

- (1) Physical Geography.
- (2) Practical work, including the elementary study of Map Projections and statistical maps and diagrams.
- (3) General Human and Economic Geography of the World.
- (4) The study of selected special regions in all their geographical aspects.

We consider it very desirable that two Special Regions of different character should be studied and that each school should be able to make its choice from a carefully selected series. As the British Isles are prescribed for special study in the School Certificate Examination we think that they should not in themselves constitute one of these regions, though they may reasonably form part of a West European region.

Having considered the arrangements of all the Boards, and in view of the proposal, already adopted by two of the Boards, to set a special and additional paper for scholarship candidates, we recommend that the work of the ordinary candidates should be tested by two papers, one devoted to Physical Geography and practical work and the other to General Human and Economic Geography and the Special Regions.

The scholarship paper (or papers) should be set within the limits of the Higher School Certificate syllabus. We consider that it would be preferable to regard the two Higher School Certificate ordinary papers as a hurdle, on which a good pass should be attained, and to rank the work of scholars on their performance in the scholarship paper (or papers) alone.

*Subsidiary.*—The dual aspect of Geography makes it suitable to serve as both an ancillary and a relief subject. We consider, however, that the Subsidiary Syllabus should be limited, not by the truncation of the Principal Syllabus, but by prescribing a more restricted scheme of work in both physical and human geography, which should include the study of one special region. Several Boards have succeeded in devising a satisfactory examination on these lines.

*Moderating and Marking.*—We urge that more attention should be paid to the revising of draft papers, and that they should be submitted to at least one experienced person who is engaged in teaching pupils at the Higher School Certificate stage.

Arrangements should also be made for the re-marking of all scripts of borderline pass and distinction candidates by a second examiner.

## 4.—CLASSICS

In writing their reports on the Higher Certificate Examination in Classics in the various Examining Bodies the Investigators have assumed that the Higher Certificate Examination is designed to be taken not less than two years after the School Certificate Examination; they have assumed also that a subsidiary subject involves two years' work with considerably less time available than that normally given to a Principal Subject.

*The Distinction between Group (i) or A, and Group (ii) or B.*—At the outset of their work the Investigators found that in the regulations of some Examining Bodies a distinction is drawn between Latin and/or Greek taken in Group (i) and in Group (ii); and their first task was to consider the meaning and worth of this distinction. They were unanimous in believing that it is possible and desirable to distinguish between two broad views of the purpose with which the study of Latin and/or Greek may be undertaken in schools, and their experience as Investigators has strengthened rather than diminished that belief.

But in the existing or proposed regulations of several Examining Bodies this distinction is not drawn at all, and in others with varying degrees of clearness. They therefore regard it as their first duty to indicate briefly the two main views which may be taken of the nature and purpose of Latin and Greek in the Higher Certificate Examination.

On the one hand the full classical course, consisting of Latin, Greek and Ancient History and Literature, may constitute the whole field of the examination, since it occupies the bulk of the pupils' time at school; and all branches of the work, including composition, may be tested at a comparatively advanced stage. This work is generally known as Group (i), and the Investigators have little to say in general to improve the examination in this group.

On the other hand Latin or Greek may be combined in the school course with Modern Studies, among which may be included English or History or French. The main interest and purpose of pupils combining an ancient language with Modern Subjects are then to be found in the subject-matter rather than in the minutiae of language or style, and their main need is facility in reading. The examination which comes at the end of such work should therefore test, and so encourage, wide reading of the best literature, especially literature which has a bearing upon the modern subjects chosen or has exercised strong influence upon modern writers. Books to be read extensively should be prescribed in the examination with this purpose in view, and a suitable selection from alternative books should be made by the schools; the test would consist of translation and essay questions on subject-matter. At the same time to encourage facility in

reading, unseen translation should be a part of the course and the examination, while to ensure accurate reading easy continuous prose composition should be required ; but the translation of sentences illustrating advanced points of syntax has no place in the examination. Further, a paper on Roman, or Greek History and civilisation should be a necessary part of the study of Latin or Greek in combination with Modern Subjects, and stress might well be laid upon periods which are likely to be most suitable for this kind of pupil.

The Investigators, then, attach the utmost importance to the distinction between the aims and needs of the two groups of pupils ; and they regard any attempt to combine the syllabuses or papers of Group (i) and (ii) as harmful to the interests of each group. They hope that the Examining Bodies will be able to preserve or restore the two kinds of examination, whether under the " Group system " or in some other way ; for they think that the distinction is in the interest of Classical studies in general, and particularly of classical work at the newer Universities, in which either classical language may be taken alone or in conjunction with a Modern subject. Indeed they are not without a belief that some support for this view may come also from those at the newer Universities whose concern is primarily with those modern subjects which may be combined with an ancient language, or which require considerable knowledge of an ancient language.

The Investigators therefore suggest that the examination in Group (ii) or B might include the following papers :—

(1) Set Books ( $2\frac{1}{2}$  hours).

(2) A paper on History and civilisation ( $2\frac{1}{2}$  hours).

(3) Composition and Unseen Translation ( $2\frac{1}{2}$  hours) ;

and further suggest that—

(1) Set books of moderate length and representative of the best Latin Literature should be prescribed ; these texts should be read extensively and the test should consist of translation and questions on subject-matter.

(2) The paper in History and civilisation should lay stress on elements which are of importance to Modern studies and for this reason the emphasis for Latin candidates should fall on such subjects as the Organisation of the Empire, provincial Government and life, including that of Britain, the rise of Christianity, the main trends of Roman literature, and, for Greek candidates, on the 5th and 4th centuries B.C.

(3) The passages set for Composition and Unseen Translation should be considerably less difficult than those set for Group (i).

They would also recommend that—

(i) " Composite papers ", containing " prepared " and " unprepared " elements should not be set.

(ii) A minimum standard should be required for a pass and a "distinction" in prose composition and "unseen translation".

(iii) "Distinction" should be awarded in this group on its own papers.

(iv) As a concession to the small schools which wish to present candidates both in Group (i) and Group (ii) but find it difficult to undertake the preparation of different books in each Group, it should be permissible to take the prepared book papers of Group (i) in lieu of the book papers of Group (ii).

(v) A candidate should not take both Latin and Greek in Group (ii).

(vi) In Group (ii), Latin (or Greek) should have its own standards and values and should not be judged by comparison with Latin in Group (i).

*Group (i).*—The Investigators suggest that in all Examinations opportunity should be given to a candidate to take Latin and/or Greek Verse. They suggest also that it would be possible to devise a fair method of giving weight for deserving work in verses in those Examinations which take account of a candidate's aggregate (as opposed to "distinction") in assessing his performance.

Further, they think that, when the number of candidates is small, the same examiner might well mark papers in both Greek and Latin.

*Subsidiary Subjects.*—As regards subsidiary subjects the Investigators would suggest—

(a) That the following subjects might be alternative (i) Latin Unseen Translation (prose and verse) and one short set-book, (ii) Greek Unseen Translation (prose and verse) and one short set-book, (iii) a period of Roman History with questions on the literature, (iv) Greek Literature (set-books in translation) with questions on history.

(b) That the standard required for a subsidiary subject should be such as to demand not less than two years' Sixth Form work with half the time allowance of a Principal Subject.

(c) That when a Higher School Certificate is awarded on three Principal Subjects only, good work in a subsidiary subject should turn the scale in favour of a candidate on the border line.

(d) That for pupils who are not candidates for State Scholarships a programme of two Principal and two subsidiary subjects may offer a very satisfactory course of work.

(e) That it is not in the interest of Sixth Form work that a candidate for the Higher Certificate should replace Principal Subjects by subsidiary subjects so that he would take less than two Principal Subjects.

(f) That candidates who have one year's work only in a Sixth Form may secure exemption from a Matriculation examination by passing in four subjects at the subsidiary level.

(g) That State Scholarships should be awarded on Principal Subjects only, but that really good performance in a subsidiary subject should turn the scale between candidates approximately equal on their Principal Subjects.

*The selection of State Scholars in Classics (or Latin).*—On the whole the Investigators are satisfied that within each Examination it is possible to select State Scholars in Classics on the examination without at the same time imposing too great a strain on the "pass" candidate who is himself perhaps rather above the average in ability. But they realise that Classics are in a special position, for not only are there two groups in which Latin (or Greek) may be taken, but in some Examinations there are within Group (i) "distinction" pieces for prose and unseen translation. They are satisfied that within Group (i) selection of the right candidates is possible and has been achieved, particularly perhaps in the smaller Examining Bodies.

There is less certainty, however, that in Group (ii) or B, in which Latin is taken with other subjects, there can be sufficiently precise means of assessing performance in various combinations of subjects, and it was less clear to the Investigators that outstanding performance in Latin received recognition or that inferior performance was always taken into account.

On the other hand, the Investigators were by no means satisfied with the working of the system as among Examining Bodies. While it may be difficult to demonstrate the superiority of one candidate over another when the candidates have taken different papers, the Investigators were of opinion that the standard of achievement of the State Scholars varied considerably from Examination to Examination; and that some candidates awarded State Scholarships would not have gained them if they had been in competition with candidates unsuccessful elsewhere.

*Suggested changes in the Higher Certificate Regulations.*—(1) It is clear from what has gone before that the Investigators would be sorry to see any change which would dispense with the distinction between Group (i) and Group (ii).

(2) In any change which contemplated the addition of special scholarship papers, they believe it would be possible to set such papers in both Groups (i) and (ii), and thus to preserve the two types of work, and to test each appropriately at a normal and an advanced level.

For example, in Group (ii) the advanced papers might be (i) Unseen Translation of passages of varying type, or (ii) Unseen Translation and translation of passages taken from a wider prescription of books of the same authors from whom the set-books of the

pass candidates were chosen ; besides translation some essay questions could be set which would demand knowledge of the author and his literary or historical setting.

(3) But while such changes might contribute to the solution of problems in subjects other than Classics, and in Classics might relieve such undue pressure upon the non-scholarship candidate as may exist, there still remains the problem of the equating of standards as between Examining Bodies in the award of State Scholarships.

## 5.—MODERN LANGUAGES

A. *As Principal subjects*

*Syllabuses.*—The syllabuses in Modern Languages all include Translation from and into the language, a free composition of restricted length, a paper or papers on Set Books with general questions on the literature and history of the country concerned, and an oral examination, which includes dictation, and may or may not be compulsory for all candidates. Some Examining Bodies in addition to general questions on literature and history include also optional questions on other aspects of the foreign civilisation such as economics and the arts.

But, although certain features are common to all, the requirements of the different Bodies vary in some important particulars. Thus, the number of texts to be studied is not the same for all Examinations, the importance attached to the oral test varies, some Bodies insist on a certain standard in the language papers as a condition of pass or distinction while some do not, and the total time taken up by the examination is much longer in some Examinations than others. Moreover, the range of literature to be covered is much wider in some Examinations than others: some Bodies require a special study of one period, e.g. French Classical Literature, others prescribe books out of several periods, or arrange the list of works in such a way as to allow either the study of a period or a more general survey.

In general, the books set, whether for detailed or more extensive study, in that part of the syllabus which is purely literary, are suitable to the age and attainments of the candidates. The choice of works for more general reading, however, is not always so happy. Thus, some of the works set on topography and institutions are mere compilations of facts which throw little real light on the genius of the country or people. Some again of the works on politics or economics are so general that they might have been read in any language, and cannot be said to be appropriate to a specifically French or German syllabus. The experiment tried by one Body of including an unprepared text for comment (*explication de texte*) appears to the Investigators to be fully justified by its results.

*Papers.*—In the passages set for translation from and into the foreign language the standard of difficulty varied, but many of the pieces set in the 1937 examination were more suitable for scholarship than for pass candidates, with the result that examiners were constrained to pass many of the latter in spite of very poor performance in the language papers. Even the requirement insisted on as a condition of passing by some Examining Bodies, that candidates must reach a certain standard in the language papers, fails in its object if the passages set are beyond the capacity of the average

candidate. Free Composition questions were varied and suitable in themselves, but the restriction of the answers to a limited number of words is unnecessarily hampering to a really good scholar especially as this question is his only chance in the examination of showing power of expressing more or less original thoughts in the language. In the literature papers the questions on the whole were well set, though perhaps inevitably there were many which could be answered by mere handbook knowledge and required no particular powers of thought. On the other hand, in some papers there were questions demanding too great maturity of judgment. Questions divided into two parts, each of which is in effect a separate question, are to be deprecated especially as in all the Examinations the average time allowed for each question is half an hour. On general grounds, this time allowance is felt to be too short for the better candidates, who should be given the opportunity of writing essays of greater scope than are possible in half an hour.

*Allocation of marks.*—The allocation of marks calls for one criticism. The balance between the language papers and the literature papers was such as to give an undesirable advantage to the latter with the result that in Examinations with no "hurdle" which awarded passes and distinctions mainly or wholly on aggregate a candidate could amass so many marks in the literature papers that he could pass or even in some Examinations obtain distinction in spite of a very poor performance in language. In individual papers the relative values of the different questions had clearly been carefully considered and no such anomalies were noticed. It is not clear, however, why in the same Examination the allocation of marks in papers on different languages should show wide variation.

*Marking.*—The problem of the standardisation of marking obviously arises only in the examination of subjects taken by a large number of candidates; in Modern Languages this means, in effect, French, as the numbers taking other languages is in all the Examinations small, and even the candidates in French are comparatively few in number in Examinations of the smaller Bodies. Of those which examine large numbers, nearly all take the necessary precautions to standardise the marking of the various examiners employed and the results are, statistically speaking, reliable; it is felt, however, that the application of strict statistical method may lead to over mechanical marking and there is evidence that real brilliance did not always gain its true recognition where such methods were applied. On the other hand, certain Examining Bodies which did not exercise sufficient care in standardisation produced really unreliable results which the application of a measure of statistical control could easily have avoided. In the smaller Examinations and in subjects taken by few candidates in all Examinations, the difficulty of course is much less marked, and the results in these were generally reliable; with some exceptions, the standard of care on the part of individual

examiners is satisfactory. The Investigators are of opinion, however, that in general, in papers where more than one examiner is concerned, more care should be taken, not only to arrive at agreement in methods of marking at the outset, but to control the marking at intervals throughout the process ; in order to secure such control it is suggested that chief examiners should personally mark only a small number of scripts and should thus be freed to exercise more supervision over their colleagues. In at least one Examination two examiners marking the same paper were allowed to produce results of quite surprising incongruity without apparently arousing the suspicions of the awarders. Further, it is felt that some Bodies do not exercise a sufficiently rigid scrutiny at the awarding stage ; all papers at the borderline of pass or distinction should be very thoroughly scrutinised and if necessary remarked, the margin at distinction level on each side of the line being made sufficiently large to include such candidates as show marked promise in some part of the papers even though their aggregate marks are well below the distinction mark.

*Standard of Pass and Distinction.*—Taking all the Examinations together the Investigators feel that most of the candidates who gained Distinction deserved to do so. But in some Examinations too much weight was attached to mere aggregate and not enough to excellence in some part or parts of the candidate's work. Moreover, in those Examinations which did not insist on a high standard in language as a condition of award, some candidates gained Distinction on a high aggregate of marks the great majority of which were accumulated on Set Books only.

The standard of pass varied somewhat, but on the whole it represents a low level of achievement, especially in language ; where a " hurdle " exists, the standard was perhaps better, but in all Examinations a large number of candidates pass who, on the papers set, have little to show for two years' work.

*Efficacy of Examination for award of Scholarships.*—In all the Examinations the papers contained some questions suitable as a means of selecting Scholars ; there is no guarantee, however, in a paper containing both " distinction " and " pass " questions that the potential Scholar will choose the right questions and it is possible that some good candidates were missed in this way. Moreover, failure to include questions demanding an answer in the language, of extended essay type designed to test both reading and knowledge of the language, deprives the examiner of one of the best indications of excellence. Yet, with the exception of a few candidates who were judged on mere aggregate, it appeared to the Investigators that in all Examinations the great bulk of the candidates who gained Scholarships deserved to do so, especially those whose main language was French. On the other hand, the papers in German and Spanish varied so much in difficulty that some candidates who

gained Scholarships mainly on those languages did so on the strength of their performance in papers of a much easier character than those set in French ; it is clear that effective steps are not taken to equate, as far as practicable, the papers set in different languages by the same Body.

### B. *As subsidiary subjects*

The requirements for passing in a language at subsidiary level vary widely in the different Examinations. The maximum is a Set Book and a choice of two out of three papers on Translation, Prose Composition and Free Composition, the minimum, translation into English only. But whatever the requirement the standard necessary for a pass did not seem to the Investigators to be high enough to justify the ranking of a Subsidiary as half a Principal Subject. Indeed, they feel that subsidiaries as at present examined ought not to count at all in the award but should merely be evidence that a candidate has spent some time, with profit, on a subject ancillary or supplementary to the main subjects of study.

### C. *New Proposals*

The present system, which attempts, within the same set of papers, to provide for the needs of both pass and scholarship candidates, contains features unfavourable to both categories. The tendency, for instance, to set difficult passages for prose composition and translation bears hardly on the pass candidate, whereas the absence of an essay of extended scope in the foreign language deprives the real scholar of one of his best chances of distinguishing himself. The latter is at a further disadvantage in the Literature papers, which require him to answer so many questions in the time allotted that he can hardly devote more than half an hour to any one answer ; it is easy to see that this restriction may prevent him from doing himself full justice. There are, then, strong arguments in favour of providing special papers for the scholarship candidates which those aiming only at a pass should not be required to take.

The Investigators are fully aware that such differentiation may give rise to the fear that the standard of achievement required for a pass may thereby be unduly lowered. They feel that this fear is without real grounds ; the present papers, especially those on language, which, as noted above, are in some important respects too difficult for the pass candidate, give him little chance of showing what he really does know, whereas easier papers might give quite a different impression of his powers. Rather than a lowering of the standard the Investigators envisage :—

- (a) The elimination from papers taken by pass candidates of questions of the scholarship type and of passages for translation from and into the language which are beyond the scope of the average candidate who has completed two years of post School Certificate work.

(b) A restriction of the scope of the literature papers in the sense that knowledge of political and literary history would not be tested except in so far as it is directly related to the prescribed texts.

(c) A more discriminating marking at the pass level without a greater percentage of passes than at present.

(d) To prevent a false balance between the literature and language papers it should be the condition of a pass that a certain standard must be reached in the language papers.

Several of the Examining Bodies are introducing radical changes into the syllabus of the Examination in the next few years with the object of securing different treatment for pass and scholarship candidates. All the new schemes contain certain features which appear well calculated to overcome the difficulty of providing for two kinds of candidates in the same Examination, but some are open to the objection that a scholarship candidate is required to do too much. The Investigators suggest tentatively the following scheme which embodies the virtues of those schemes already proposed and attempts to avoid some of their disadvantages.

(a) For a pass a candidate should be required to do two papers :—

(I) Prose (1 hour), Unseen Translation ( $\frac{3}{4}$  hour) and Free Composition ( $\frac{3}{4}$  hour).

(II) Set Books, with questions testing knowledge of the Social, Literary and Political History necessary for the understanding of the texts. Candidates should be required to offer four out of a list of nine books. Those taking the Examination for the second time need not offer more than two of the books previously studied.

There should be, in addition, a compulsory oral test.

(b) Scholarship candidates should take three papers :—

(I) Prose and Unseen ( $2\frac{1}{2}$  hours) ;

(II) Essay paper consisting of :—

(a) An essay in French based on general reading in Literature and History ;

(b) Questions of the essay type to be answered in English ;

(c) Explication de texte ;

for (a) and (b) a wide choice should be given, and for (c) a choice of two unprepared passages ;

(III) Identical with Paper II taken by pass candidates.

The oral examination of scholarship candidates should be more searching than that required for a pass.

Candidates for a Scholarship who fail to secure an award should be allowed to pass for the Higher Certificate on the scholarship papers if they reach a satisfactory standard.

The Investigators also suggest that there might be three forms of subsidiary paper, none of which, however, should be taken into account in the award of State Scholarships.

(1) A paper on the institutions, economic structure, political organisation and geography of the foreign country. For pass purposes, this might be considered equal to half a Principal Subject.

(2) Pass Paper I. If a satisfactory standard were insisted on this might well count as half a Principal Subject.

(3) A paper which might be taken by candidates whose principal study is History, Classics, Science or Mathematics. Candidates would be required to translate two passages, one quite general, to be taken by all candidates, and one other from a choice of literary, scientific or historical passages. This paper should not count for a Certificate, but should be entered as an additional qualification.

The advantages of the scheme suggested by the Investigators appear to them to be :—

(1) It will be possible to award on scholarship papers alone, if this is considered desirable.

(2) Scholarship questions will be excluded from the papers taken by pass candidates, who are thus not required to attempt what is outside their range. Easier papers with stricter and more discriminating marking is a more appropriate test for such candidates.

(3) It will be possible for scholarship candidates to take the Examination more than once without repeating any appreciable part of the prescribed work.

(4) The scheme permits of scholarship and pass candidates being taught together for the greater part of the Higher School Certificate Course.

(5) The maximum of freedom is allowed to schools in the matter of general reading.

General questions on the civilisation and culture of the foreign country are provided in a "subsidiary" paper, on the grounds that their inclusion in the "Group" or "Principal" papers tends to obscure the scholarship issue and introduce an excessive number of questions designed to elicit mere information. The subsidiary paper suggested would be optional, but it would be to the advantage of Modern Language candidates to take it.

## 6.—MATHEMATICS

As a result of the investigation of the eight Examinations in Mathematics certain facts stand out clearly.

(i) The attempt to make the same examination, without special scholarship papers, serve a double purpose, i.e. to test the two years' work after the School Certificate and to select candidates suitable for Scholarships, has not been entirely satisfactory. In some cases the needs of Higher Certificate candidates have not been sufficiently considered but a reliable selection of candidates for Scholarships has been made. In others the average candidate has been properly catered for but the questions set have not offered sufficient scope for potential scholars. In fact there has been a very striking difference in the papers set by the various Bodies to fulfil the same purposes. In one area, where the special requirements of the Intermediate examination have to be considered the problem has been still further complicated.

(ii) In some of the Examinations, scholarship awards for Mathematics are made both to candidates who have offered Advanced Mathematics and to those who take the subject at a lower stage. On the papers set it has been impossible to make a fair comparison of candidates of the two types.

(iii) The papers in Advanced Mathematics are beyond the reach of almost all candidates until the end of the third year of post School Certificate work, while the papers in Mathematics at any lower stage are not an adequate test of three years' work.

(iv) It was felt by the Investigators, and, indeed by some Examining Bodies, that in making scholarship awards in Mathematics or Science, candidates should be judged primarily on their work in either Mathematics or Science, that some attention might be paid to the work in the second subject, but that mere addition of the marks gained in the two subjects would be of little assistance in selecting the more deserving candidates.

Further, while some Bodies are alive to the Mathematical needs of the Science specialist others, although possibly providing for him papers in Pure-plus-Applied Mathematics, do not make proper provision in those papers for meeting these special needs. In the result the Science specialist while at school, may have to work through a syllabus in Pure Mathematics for which he has not adequate time and which contains much that is irrelevant. For his purpose, broadly speaking, what is required is substantial Applied Mathematics and Calculus, together with those other parts of Pure Mathematics which are needed in developing these subjects.

(v) The aims of the subsidiary papers have sometimes not been fully considered or are vague. The requirement in some cases has been little higher than that for a credit in the School Certificate Examination, and in others has in scope far exceeded all reasonable limits.

With these considerations and the new proposals of three or four Examining Bodies before them the Investigators have attempted to devise a system which would meet all needs without unduly multiplying the number of papers. In their view the needs would be met by papers on :—

- A. *Advanced Mathematics.*
- B. *Mathematics (i) Pure (ii) Applied.*
- C. *Mathematics for Science Candidates.*

Serious students of the subject would not offer Pure or Applied Mathematics alone, but there would be a small group of candidates who might profitably do so. A, would cater for the third year and B, for the second year Mathematical specialist. Provision for the comparison of candidates who offer A, with those who offer B, would be necessary, and the needs of the Higher Certificate as well as of the State Scholarship candidate would have to be met.

Some such arrangement of papers as the following, with minor adjustments, might satisfy most requirements.

*Advanced*—I Analysis, II Geometry, III Mechanics.

*Pure Mathematics*—I, II, III (Scholarship and Distinction).

*Applied Mathematics*—I, II, III (Scholarship and Distinction).

*Mathematics for Science Candidates*—

Pure (one 3 hour or two 2 hour papers).

Applied (one 3 hour paper).

Candidates in Advanced Mathematics (counting if necessary as three Principal subjects) would take the advanced papers and the scholarship papers Pure III and Applied III. Scholarship candidates in Mathematics (counting as 2 Principal subjects) would take Pure I, II, III, Applied I, II, III. Thus these two types of candidates would both be taking Pure III and Applied III. These papers would be set on the same syllabus as the other B papers, and would be used to compare A and B candidates.

Distinction would naturally be obtainable in A. For a distinction in B, the scholarship papers would be taken, but for ordinary Higher Certificate purposes Pure I, II and Applied I, II would provide a pass in two Principal Subjects. The C Mathematics would rank as one Principal Subject and carry no distinction. Science candidates with special ability in Mathematics could as an alternative take B papers and be eligible for distinction if they took papers III.

For a pass at the subsidiary level candidates would take C papers in either Pure or Applied Mathematics.

*Syllabus.*—In the papers and in the syllabuses there was a tendency for certain topics to become stereotyped. Sometimes the questions seemed to encourage the use of old-fashioned methods. This is likely to hamper those teachers whose methods are the most up-to-date. It is suggested that syllabuses should be revised from time to time in the light of modern developments and that the papers should offer some encouragement to the more progressive teachers.

In the revision of syllabuses the following considerations should be borne in mind :—

*Analysis.*—Traditionally the approach to the theory of the logarithmic and exponential functions has been algebraic, beginning with a definition of  $\exp. x$  such as the sum to infinity of  $1 + \frac{x}{1!} + \frac{x^2}{2!} + \dots$  or the limit of  $\left(1 + \frac{x}{n}\right)^n$ . These methods involve serious difficulties which have had to be evaded in schools. Alternative methods of approach can be found. If calculus is given an early place in the mathematics course, these functions arise naturally in connection with integration of  $1/x$ .  $\log x$  may well be the fundamental function defined as  $\int_1^x \frac{dt}{t}$  and the exponential function would then be introduced as the inverse of  $\log x$ , and  $e$  defined by  $\int_1^e \frac{dt}{t} = 1$ .

Formal work on infinite series belongs to the advanced course, but the ideas involved will be introduced at an earlier stage by means of sequences. The expansions of elementary functions as power series will be approached by successive approximations, valid for certain values of  $x$ , to the value of the function. In connection with these expansions the investigation of inequalities such as  $x/(1+x) < \log(1+x) < x$  and  $1 - \frac{1}{2}x^2 < \overline{\cos x} < 1$  is a valuable preliminary, the inequalities being in fact essentially more elementary than the expansions.

In order to avoid the difficult theory of expansions, it has become customary in examination syllabuses to include the "use" of trigonometrical logarithmic, exponential and binomial series. The "use" of the series is likely to become automatic, and it has little educational value. It is retained for the sake of its practical applications, but it is desirable that work of this kind should be supplemented by considerations about sequences, approximations, and inequalities as suggested above. Simple questions on these topics could appear in the ordinary papers provided that they did not involve difficult manipulations.

The infinite series which are treated in the ordinary course should be confined to those which can be summed to  $n$  terms or can be compared with series like  $\Sigma \frac{(1)^n}{2}$ ,  $\Sigma (2^n)$  or  $\Sigma \left(\frac{1}{n}\right)$ . Illustrations of ideas about limits will naturally occur, but formal results about limits and convergence have no place except possibly in the Advanced Course. Such matters as ratio-tests are of little educational value and of no value as tests of understanding. They also should appear, if at all, only at the most advanced stage.

*Geometry.*—It is usual to include some pure geometry in the 2 years' syllabus. This rightly includes some solid geometry. The theories of harmonic section and pole and polar with respect to a circle appear sometimes in this syllabus. It is not desirable to start from a metrical definition of polar with respect to a circle but rather to postpone the introduction of the polar until the general theory can be developed analytically for the conic. If the harmonic theory is no longer required in the two years course for the sake of its application to polars, it will become an isolated topic and might well be postponed until it can be adequately developed. The greater part of the Higher Certificate geometry is analytical and its aim should be to develop the use of various analytical methods. There should be no limitation to Cartesian equations; polar equations should be introduced in appropriate cases. Also the work should not at any stage be confined to the study of conics; there are many simple curves which can be dealt with by means of parameters.

When the time comes to investigate the geometry of conics, the choice of appropriate methods should be encouraged. The results should not all be obtained by any one particular method. For some properties the use of Cartesian co-ordinates is most unsuitable: sometimes the proof by "Geometrical conics" is the best; at a later stage projective methods can be used with advantage.

The implication of some syllabuses that projection ought to be used to deduce general properties—e.g. properties of the quadrangle and conic from special cases of parallelogram and circle—runs counter to modern tendencies. Although it may not yet be possible to abandon the metrical basis of projective geometry in the school treatment of the subject, it is undesirable to discourage the more modern methods, either in the syllabus or by the form in which questions are set in the examinations.

The Investigators of both Mathematics and Science are strongly of the opinion that Hydrostatics should not appear in the mathematic papers. The subject is included in the Physics syllabus and candidates who take both physics and applied mathematics are therefore unduly favoured by its duplication. Further, when once the ideas involved are understood, the mathematics is, for the most part, elementary. It is *possible* to invent questions of reasonable difficulty but these are often artificial, and in any case do not involve mathematics which is not being tested in other ways.

*Mechanics.*—Although the use of Calculus should be encouraged it is doubtful whether the average candidate should be expected to reach "Virtual Work" during the two years' course.

In Dynamics some work on rotation about a fixed axis ought to be included, even in Section C.

## 7.—SCIENCE

*Character and Scope of the Examination.*—Since 1926 additions have been made to the Science subjects of some of the Examining Bodies with the result that most now include Physics, Chemistry, Botany, Zoology, Biology and Geology among those which may be offered at the Group (or Principal) Stage. Physics-with-Chemistry may also be taken in the case of some Bodies, and an alternative Biology called the General Principles of Biology, at one.

The requirements of the different Examining Bodies vary considerably; where only two Principal Subjects are demanded the course does not provide a sufficiently wide basis for a satisfactory training in Science, while too heavy a burden is placed on both candidates and schools where four Science subjects are taken in order to secure exemption from the Intermediate Examination. The issue is further complicated by the fact that the Examination is required to serve the dual purpose of selecting State Scholars and of testing a two years post School Certificate course. So far as Science is concerned it fails in this objective.

*Syllabuses of Group Subjects.*—Among general criticisms of the syllabuses, mention may be made of the following:—

In Physics many of the syllabuses seem quite out of touch with a scientific age; frequently modern developments are omitted and no attention is given to industrial and everyday applications. General physical principles are seldom set for study as such, though they may receive sectional mention in one branch of Physics. Sound is very much neglected though the whole subject has been put on a new basis during the last twenty years; such topics as the acoustics of buildings and sound reproducers are not included.

In Chemistry some of the syllabuses contain unnecessarily long lists of elements to be studied, and no distinction is made between those that have to be done fully and those to be taken as part of general classification. In Organic Chemistry, the compounds of which details of preparation are required are not specified.

Some of the syllabuses in the biological sciences are overloaded on the morphological side. This is due in the main to the inclusion of too many types and natural orders and to failure to confine histology to definite types, e.g. the frog or mammal. The former difficulty may be avoided by differentiating between types for detailed and for more general study. A major defect in some syllabuses, too, is the limited attention paid to humanistic and cultural aspects; few of them require a knowledge of the applications of Biology to everyday life and work or of recent advances in Biology.

It may be noted, too, that where some of the criticisms have been met in the revised syllabuses, the applications of Science are frequently omitted for candidates taking the ordinary papers. These aspects also receive even less attention in subsidiary syllabuses, so

that candidates who are least likely to continue the study of Science have little opportunity of realising how closely scientific discoveries affect human progress or their own life and work.

The syllabuses in two of the subjects, namely Biology and Physics-with-Chemistry, call for special criticism. While some, in the case of Biology, are framed on sound and interesting lines and give a definite lead to the teacher, most of them fail to realise the essential unity of the subject; some in fact consist of separate sections on plant and animal life and in the case of one Examination these sections also serve as the syllabuses for Subsidiary Botany and Zoology respectively. In most, undue emphasis is placed on structural detail rather than on fundamental biological processes and principles. This leads to overloading as compared with the group syllabuses in Botany and Zoology and to a treatment little suited to the needs of the pupils for whom the subject is primarily intended, namely, those taking it to widen a course of Modern Studies or Mathematics, or of Physics and Chemistry.

In the dual subject of Physics-with-Chemistry the problem of framing a satisfactory syllabus does not seem to have been solved. The emphasis in most Examinations is laid on one side or the other, Physics being far too easy and Chemistry, in proportion, too advanced, or vice versa. In Physics the field of study is often confined to a limited number of branches. The standard in both Physics and Chemistry required for a pass is very low, the combined subject being little, if any, more than the equivalent of two subsidiaries and hence quite unsuitable for counting towards the award of State Scholarships. The subject is offered mainly by candidates who are not science specialists and it is suggested that a different type of science is required to meet their needs. This point is developed later on.

*Subsidiary Subjects.*—The syllabuses almost without exception fail to show any clear conception of the function of Subsidiary Subjects. In many cases they are identical with, or differ but little from, the First Examination syllabuses; in others they are little more than group syllabuses shortened by leaving out important branches of the subject. Few represent a two-year post School Certificate course, requiring about half the time allotted to a group subject. In many cases the knowledge necessary for a pass is so limited and fragmentary as to be practically valueless when regarded as part of a Sixth Form training. The functions of any Subsidiary Subject are so diverse that it is impossible to fulfil them all by one syllabus and by one paper.

One type of subsidiary forms part of the specialisation in science, but in a branch which need not be pursued to the same depth as the other subjects, e.g. Physics for a Biologist. Its main function should be to broaden the scientific horizon of the pupil.

A second type is one needed as extra equipment, for use mainly as a tool in the study of the subjects of specialisation, e.g. a particular selection of mathematical work for physicists and another for biologists, a reading knowledge of French and German for all scientists.

A third type might be described as a relief subject in which the cultural aspect is stressed. Science specialists, as much as others, need these relief subjects, but it is proposed to deal here only with subsidiary science suitable for those specialising in Classics, Modern Studies and Mathematics. The work should give some idea of the recent developments of science and the use man is making of his increasing power over natural forces; it should deal with the methods adopted by scientists in going about their work and give some indication of the influence of science on modern life and thought. It should lead the student to take the findings of science into consideration in ordering his mode of living and in making his philosophy of life. It is not too much to say that the inventions due to the work of scientists are the formative force behind all the material changes in the world to-day; still more should it be realised that our whole mental and moral outlook is coloured by scientific discoveries; even our very language takes on a biological flavour in many sociological problems.

It may be neither possible nor desirable to attempt to examine all the various forms in which the study of science should play its part in the training given by the schools, but at least those responsible for drawing up the syllabuses should have a clear conception of the function the subject is to fulfil, and the schools should not distort their work to be able to take an examination set on lines unsuited to their needs.

*Examination Papers.*—It is doubtful whether two years' work at the stage of the Higher School Certificate can be adequately examined in any subject with less than two theory papers and a practical examination of three hours each.

The practice of including pass and scholarship type questions in the same paper is quite unsatisfactory for reasons given elsewhere.

Many papers are not sectionalised with the result that candidates can neglect the study of parts of the subject without incurring a penalty. At present whole branches of Physics, Chemistry and Biology can be avoided.

The Biology papers are without exception unsatisfactory. Not only do they consist of papers or sections of papers on plant and animal life separately, but they tend to emphasise botanical and zoological structural detail almost to the exclusion of biological principles. The questions make undue demands on the morphological side almost as heavy as in the single subjects Botany and Zoology and hence penalise candidates offering Biology.

In Physics many papers set a premium on skill in mathematical manipulation rather than on understanding of physical principles, and in some, arithmetical substitutions have too prominent a place.

*Practical Examinations.*—There are fundamental differences between the Examining Bodies with regard to their methods of conducting practical science examinations.

The examinations fall into three categories :—

(1) All candidates have to attend at some central laboratory for examination.

(2) The candidates are examined in their own schools by visiting examiners.

(3) Detailed instructions for the provision of materials and apparatus are sent out to the schools and the candidates are judged mainly on their written performances, the examination being held at the schools without the examiner present.

If the test is to be really effective, methods (1) and (2) are the only satisfactory ones. (1) may put candidates to expense for travelling and cause them to be absent from home over a period of some days ; they work in strange surroundings. (3) is quite unsatisfactory ; there is no means of judging how a candidate tackles his work and no way of coping with unexpected difficulties or accidental mistakes. The instructions to the candidates are, in some cases, so detailed as to leave them little scope for the exercise of their intelligence. (2) is the ideal method, but it is very difficult to adopt in the case of a large examination as either it would take a long time to complete the examination, or many examiners would have to be employed, with consequent difficulties of standardisation. If candidates were divided among the Examining Bodies in approximately equal numbers, these difficulties could be much more easily overcome.

The weight attached to the results of the practical examination varies considerably ; in some Examinations it may be the determining factor, in others it has practically no effect on the results. It is recommended that not more than 25 per cent. of the total marks should be allotted to it.

In Chemistry it is suggested that candidates should be allowed to use books of reference and analysis tables. This would permit the examination to be made a real test of manipulative powers and not one mainly of memory.

In Physics some papers succeed in making the examination both a test of experimental skill and capacity to interpret results ; there seems to be no reason why all should not attain this objective.

The practical papers in Biology are similar in type and the major questions are, in some cases, equal in difficulty to those set in the separate Botany and Zoology examinations at the group stage. The test, in consequence tends to penalise pupils taking Biology

and to limit the teaching on the practical side to the traditional detailed study of a few types, a method which is unsuited to the wider and less intensive needs of Biology in which fundamental principles can be made clear by first hand acquaintance with broad outlines of functional morphology in a number of representative types, rather than by a very complete and minute examination of one or two. The essential difference in the outlook of Biology as compared with Botany and Zoology should be one of emphasis on the physiological aspect—the creature as a living entity—the study of structure being subordinated to that of function and followed only in so far as it is necessary to clarify the understanding of functional activity.

*Examination Technique.*—It is recommended that the Moderator should in all cases be a school teacher in active service. It is desirable that the paper should be submitted to him in the first case without the marking scheme and skeleton answers, so that he may judge it as it would appear to the candidates. Later he should see the paper with both marking scheme and skeleton answers and comment on all three.

In marking, all marks for subsections of questions should be shown on the scripts. Many cases were found where no credit had been given for the first part of an answer owing to the failure to adopt this precaution.

Many difficulties in standardisation would be avoided if one examiner marked the whole of the scripts for one examination paper; if numbers prohibit this, then he should mark the whole of one section, the sections being answered in different books. The principle of employing an examiner to mark a small number of scripts from one school is greatly to be deprecated as it is almost impossible to get a satisfactory standard.

If justice is to be done in the award of State Scholarships it is essential that the marks in all subjects should be adjusted to a standard curve except in so far as the Chief Examiner has valid reasons for recommending departure from the rule in any particular case. To enable statistical methods to be applied, the candidates should be divided more equally between the Examining Bodies.

*Award of State Scholarships.*—The attempt to combine the two functions of a pass and scholarship examination in the present papers by the inclusion of both kinds of questions has failed in its purpose as the scholarship questions can always be avoided by the astute candidate because of the choice allowed, and they are frequently attempted by the unwary, less able candidate with the result that his performance is not a fair reflection of his knowledge.

The selection of State Scholars should be regarded as a separate problem. All candidates should be required to take the "ordinary" papers in three Principal Subjects or in two Principal and two adequate and suitable Subsidiary Subjects (see above). Applicants

for State Scholarships and candidates for distinction should be expected to reach a high standard (say within the top 10 per cent. of the candidates, i.e. twice the present number of distinctions) in the ordinary papers in each of two subjects and then proceed, about one month later, to take one advanced paper of three hours, of scholarship type, in each of these two subjects.

The ordinary papers should contain straightforward questions only. The scholarship papers should be of a type to test understanding of principles and power of handling material rather than detailed knowledge of obscure points. The syllabus for both types of paper should be the same and approximately of a similar standard to the present 1937 ones. Distinction should be awarded in single subjects on the advanced papers.

In awarding State Scholarships, marks in two scholarship papers only should be considered and no account taken of the performance in the ordinary papers, the necessary qualifying standard in these having been reached, though the ordinary papers should be taken at each attempt for a Scholarship in order to even the burden as between those taking the Examination for the first and second time and to avoid excessive concentration on scholarship work. Scholarships should be allotted to subjects in proportion to the number who surmount the Higher School Certificate hurdle and take the scholarship paper in the subject. Special consideration might be given to subjects in which comparatively few candidates enter.

The number of candidates to be examined on each scholarship paper will not greatly exceed 400 for the whole country even in the largest subject. Two examiners for each subject should suffice, so that the papers should not be set and marked by the separate Examining Boards, but by two examiners appointed by a combined central body. All the admitted difficulties with regard to inequality of papers, marking and standardisation, and unfair distribution of Scholarships among the present Examining Boards and among individual subjects would disappear. The work of the examiners should be carried out in consultation with an advisory committee including representatives (some of them school teachers) of each of the present Examining Boards. This committee could appoint the examiners and award State Scholarships on the examiners' recommendations.

*Conclusion.*—Though a number of recommendations which, it is hoped, might help to improve the Examination, have been offered for consideration, these do not, it is believed, really get to the heart of the matter.

For candidates not specialising in Science a study of the subject should provide a conspectus of a wide field rather than a detailed exploration of a restricted part of this field. Taken as part of a general education, in combination with perhaps History and Geography, a single branch of science, e.g. Botany, studied in the

detailed way in which a group subject must at present be taken, is quite unsuitable. Science should be regarded as a whole and not as a number of separate subjects. It should be studied through topics of general importance in the everyday life and work of man in relation to his material environment. No Examination has a syllabus to meet this vital need.

Similarly, the work of the Science Sixth Form tends to be too narrow and specialised on either the physical or biological side. An adequate foundation requires a training in Physics, Chemistry and Biology. For the majority, too, some additional training in Mathematics of a suitable type is desirable. A reading knowledge of French and German is essential for those intending to continue their study of Science, and provision will also naturally be made for the further study of English. Some attempt to cater for the aesthetic side of the pupils' development is equally essential. This view entails a much wider conception of VIth Form work than is general at present and involves far-reaching modifications of the Examination.

## APPENDIX

*The Institution of State Scholarships*

State Scholarships were instituted in 1920 for the purpose of strengthening the connection of the grant-aided Secondary Schools with the Universities and of diffusing more widely the benefits of University education. The need for increased provision of Scholarships had been set out in the Consultative Committee's Report of 1918, whose view on this was confirmed by the two Committees appointed by the Prime Minister to enquire into the position of Natural Science and Modern Languages in the educational system of the country. The Scholarships were open to boys and girls in grant-aided schools in England and Wales. Candidates had to be British subjects, be under the age of nineteen on the 31st July in the year of entry and be nominated by one of eight Examining Bodies, i.e. (a) the seven Bodies conducting approved Second Examinations in England and (b) the University of Wales, which from 1920-26 conducted a special examination for candidates in Wales. Two hundred Scholarships were offered for award annually, of which 178 were for candidates in England and 22 for candidates in Wales. The Scholarships allotted to each Examining Body were to be awarded in equal numbers to boys and to girls (unless the candidates of either sex should fail to reach a sufficient standard), and were tenable for an honours degree course (other than in Agriculture) at any University in England or Wales or at a College of a University, or in the case of London at a School of the University. The period of tenure was three years which might be extended for a fourth year if the normal duration of the course to be taken was four years, or for a course of post-graduate study on sufficient evidence of special attainments supported by the recommendation of the University. The value of each Scholarship was assessed in the light of the scholar's other resources (other awards held and the circumstances of the parent), and might consist of a grant in aid of fees for tuition and examinations and a maintenance grant of not more than £80 a year.

The scheme has been modified in a number of respects in the light of experience and to meet changed conditions. In 1924 after two years in which, owing to financial stringency, no awards were made the age limit was raised to twenty and additional Scholarships were awarded in order to give an opportunity to pupils who had remained at school and missed the opportunity in the previous year. This was a special arrangement for that year, but the higher age limit has since been retained for girls. It was represented to the Board of Education at the time that in many cases girls develop rather later than boys and that the higher age limit would tend to relieve overstrain. The age limit for boys was fixed at nineteen in 1925 and in subsequent years. In 1927 the special examination for the award of State Scholarships to candidates in Wales was discontinued and candidates in that and later years took the Higher Certificate Examination of the Central Welsh Board. The total number of Scholarships for England and Wales has since that year been allotted to the Examining Bodies on a common basis, the allotment being related to the number of candidates entering for the Higher Certificate Examinations in one or more preceding years.

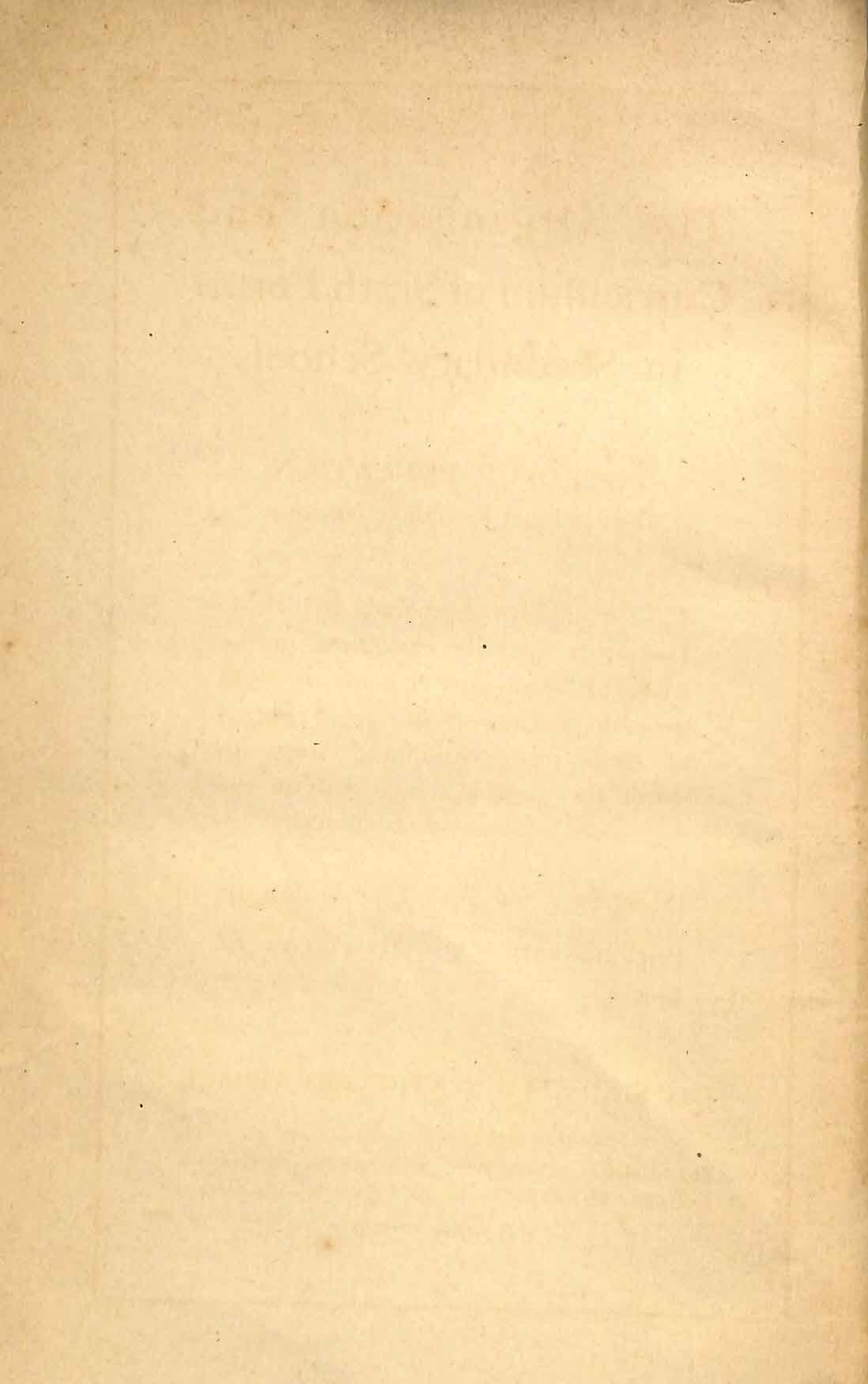
In 1930 when the scheme had been in operation for ten years the Board of Education was satisfied as a result of enquiries which had been made that the number of candidates reaching the standard for a Scholarship was considerably greater than the number of Scholarships available and accordingly decided to increase the number from 200 to 300. In view of the larger proportion of boys taking the Examination and of the higher proportion of boys regarded as reaching the standard for a Scholarship the equal division of Scholarships between boys and girls was discontinued and a division was made on the basis of the number of candidates of each sex taking the Examination. The

effect of this was to give 185 Scholarships to boys and 115 to girls, and although the proportion of boys and girls taking the Examination in succeeding years has varied to some extent the division made in 1930 was maintained until 1936.

In 1936 the Board of Education decided to throw the Scholarships open to full-time pupils in all Secondary Schools in England and Wales, whether recognised for grant or not, and with a view to maintaining the existing facilities for pupils in grant-aided schools increased the number of Scholarships from 300 to 360. At the same time the maintenance allowance available was increased from £80 to £100 a year.

The usefulness of the scheme has been under constant review as may be seen from the chapter on "Aid to Students" in the Annual Reports of the Board of Education. Subject to certain general conditions—attendance at a Secondary School in England or Wales, British nationality, an upper age limit competition at the Higher Certificate Examination—the Scholarships are now open and are tenable at any University in England or Wales for practically any honours degree course, the only exception being Agriculture. Within these limits the Board of Education have imposed no restrictions on a scholar's choice of University or choice of subject.

As to the occupations entered by State Scholars, information was collected by the Board of Education of which summaries appeared in their reports for 1929 and 1935. The later information, which differs little from the earlier, shows that of the men 34 per cent. took up teaching, 30 per cent. entered the professions (medicine, law, civil service or local government service, etc.), 17 per cent. industry, commerce, banking, etc., and 16 per cent. were engaged in research or continuing their education; only 1.5 per cent. of the men were reported as not employed. Of the women about 70 per cent. took up teaching and only 5 per cent. were reported as unemployed or living at home.



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